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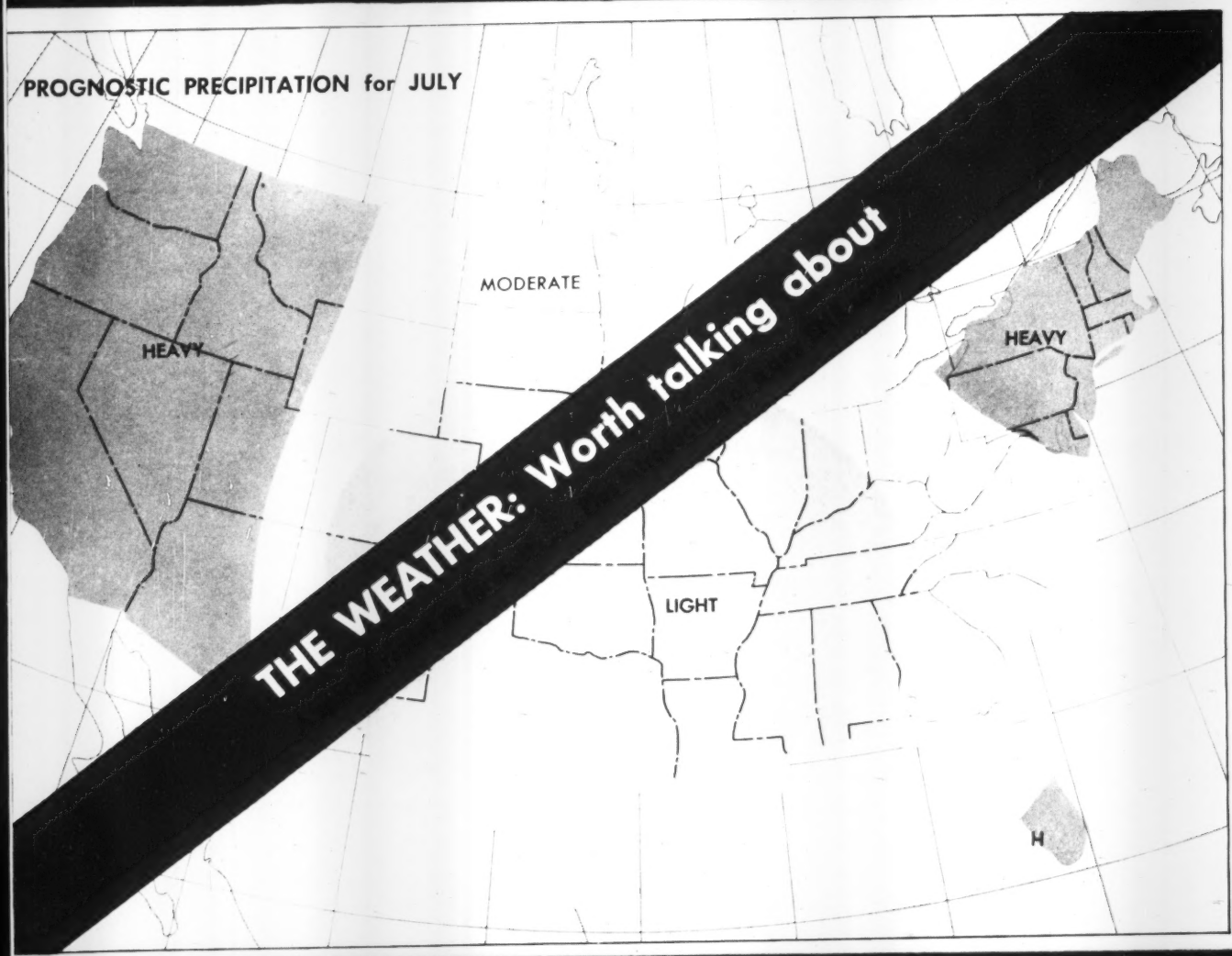

THE WEATHER: Worth talking about

★

★

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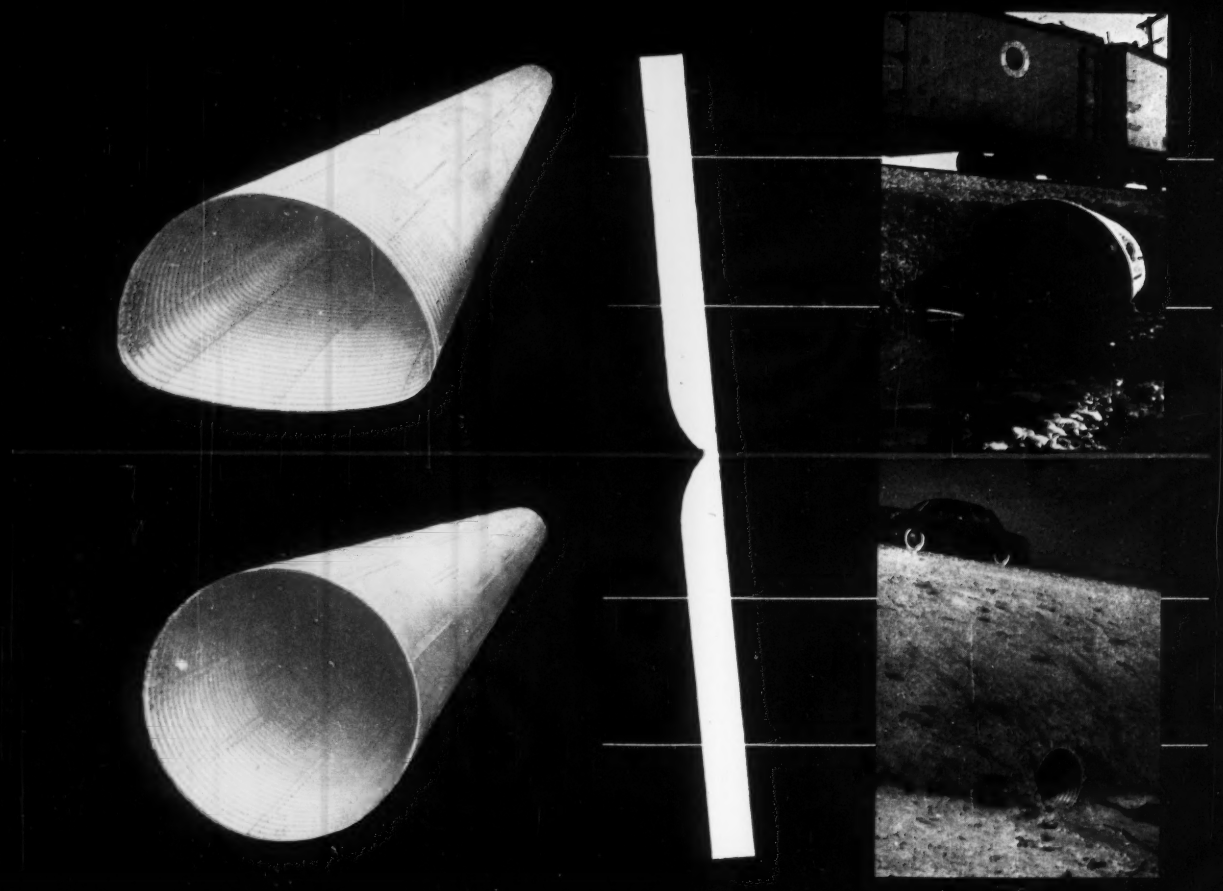

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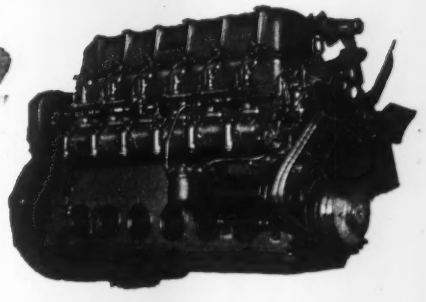

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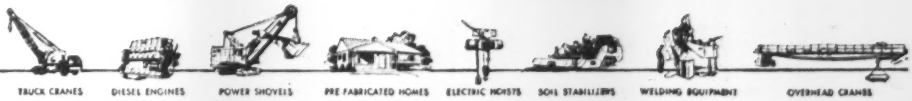

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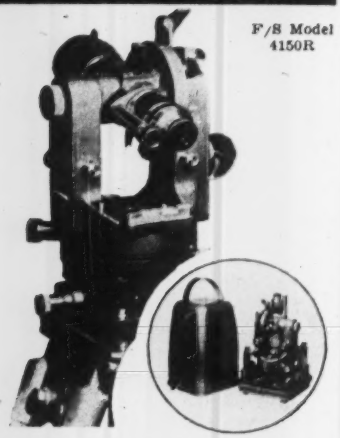

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Robert F. Boger
Publisher

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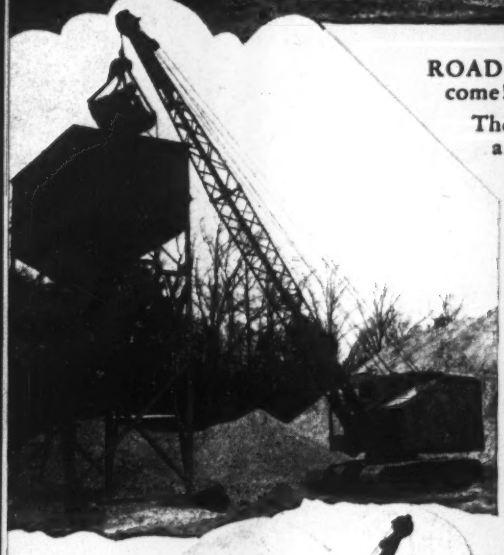
BINS TO FILL!



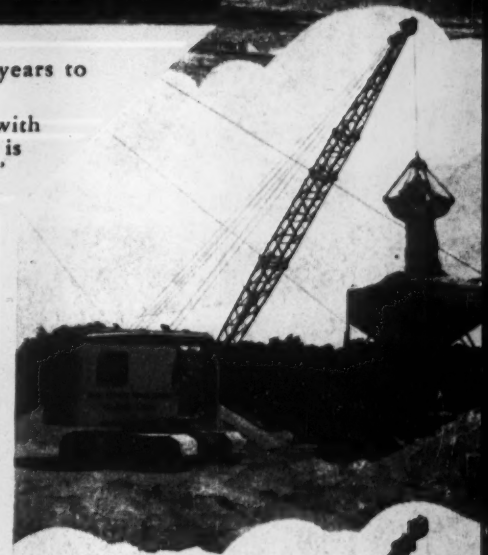
ROAD WORK ahead! And lots of it for years to come! That means bins to fill.

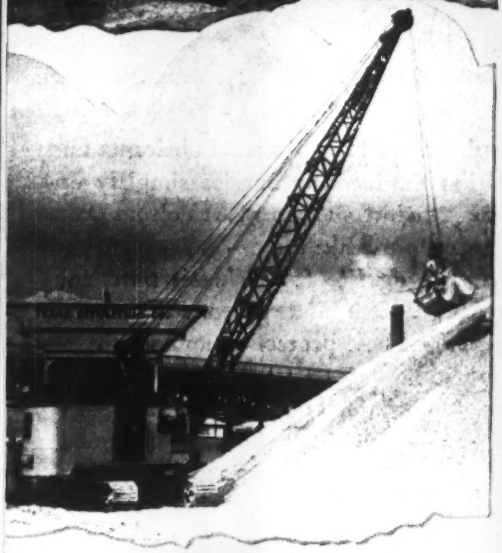
There isn't anything snappier in action with a clamshell than a Northwest. Control is easy . . . smooth. The "Feather-Touch" Clutch Control eliminates operator fatigue. It's mechanical! No pumps, compressors, valves, tubes or other delicate mechanism to get out of adjustment and shut down operation.

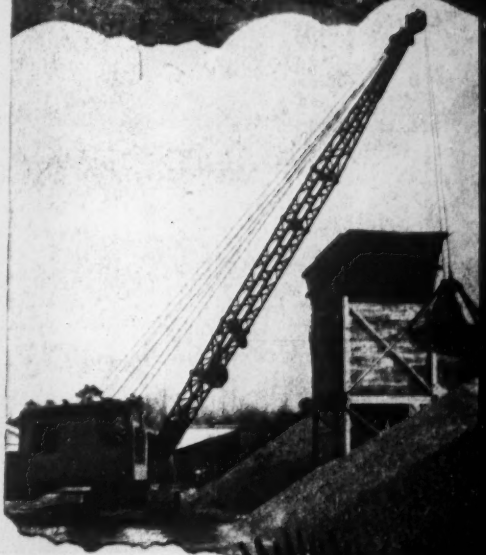
Uniform Pressure Swing Clutches eliminate the jerks and grabs that set a load swinging and slow up spotting or increase spillage—they assure gentle, sure, accurate action that gives a man full control of the bucket.

Northwest mobility makes relocating easy with the minimum waste of time. On the larger Northwests where greater weights are a factor, positive traction on both crawlers, while turning as well as when going straight ahead, negotiates haul road conditions without the ground tearing action of ordinary crawlers.

If you are going to have bins to fill, take a look at Northwest—there is nothing faster with a clamshell.







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FOR the real lowdown on how Texaco Lubricants and Texaco Lubrication Engineering Service simplify upkeep, talk to equipment maintenance men. At Folsom Dam, for instance, you'll hear reports like these —

"We're getting extra long life from chassis parts in our trucks, tractors, 'dozers and other equipment. *Texaco Marfak* gives the best protection against wear and rust of any lubricant we ever used — stays on the job in spite of heavy loads, jolts, dust and mud.

"Everything said about *Texaco Marfak* also goes for *Texaco Marfak Heavy Duty* in wheel bearings. And we like the fact that no seasonal change is necessary.

TEXACO

TEXACO

BUILDING PACE

Contractor: Merritt-Chapman & Scott Corporation
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"Texaco Track Roll Lubricant is giving us longer-than-ever service from our rollers — and they really take a beating."

Those are just three of the six basic Texaco Lubricants needed to serve all major construction equipment. Ask your Texaco Lubrication Engineer about the Texaco Simplified Lubrication Plan and how it can help you avoid mistakes, save time and money.

Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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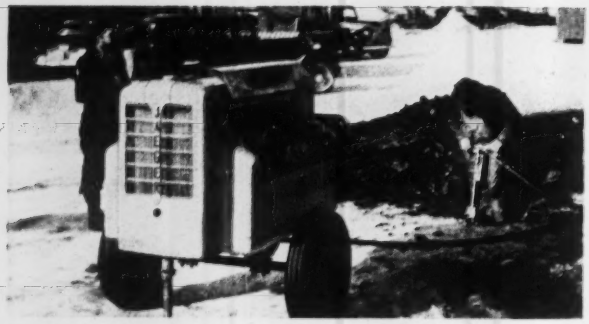
FOLSOM DAM

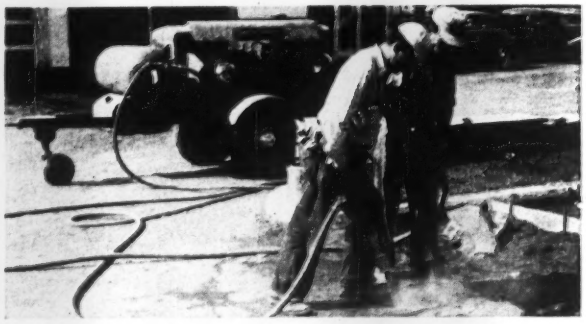
Folsom, California — said to be the world's largest earthfill and concrete structure of its kind — is scheduled for completion late in 1954. To meet this date, innumerable pieces of construction equipment must be kept working at top efficiency. Effective lubrication—*Texaco*—is one of the contractor's biggest helps.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



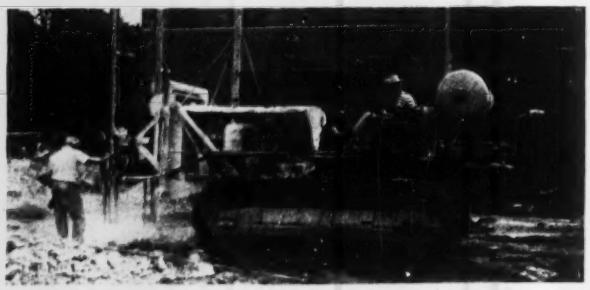
75 cfm puts full wallop in a heavy duty breaker.



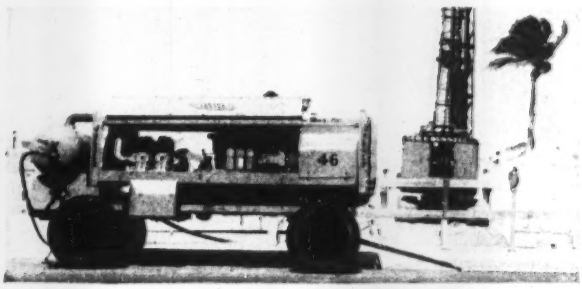
With 125 cfm these tools do 30%-40% more work.

Three 365's — enough capacity for 4 heavy wagon drills.

More Jaeger air speeds many jobs, such as line testing.



Tractor mounted and powered, operates two big drills.



Ample air for heavy pile hammers, with a Jaeger 600.

Only JAEGER has built thousands of air compressors in "new standard" ratings . . .

75 • 125 • 185 • 250 • 365 • 600 cfm

Any compressor that produces 15% to 25% more air than others, without racing, overheating or vibration, must be engineered to higher standards.

Jaeger, alone, has engineered these new standards into thousands of compressor units, whose design features are not found in any other line of portable compressors, *old or new*:

- Balanced 2-stage "W" type compressor in every model from 75 to 600 ft.
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- Relief valve for automatic drainage, standard.
- Automatic "Fuel Miser" standard on all models where speed control means worthwhile fuel saving.
- Bigger clutches than any other compressors; bigger engines operating at conservative speeds.

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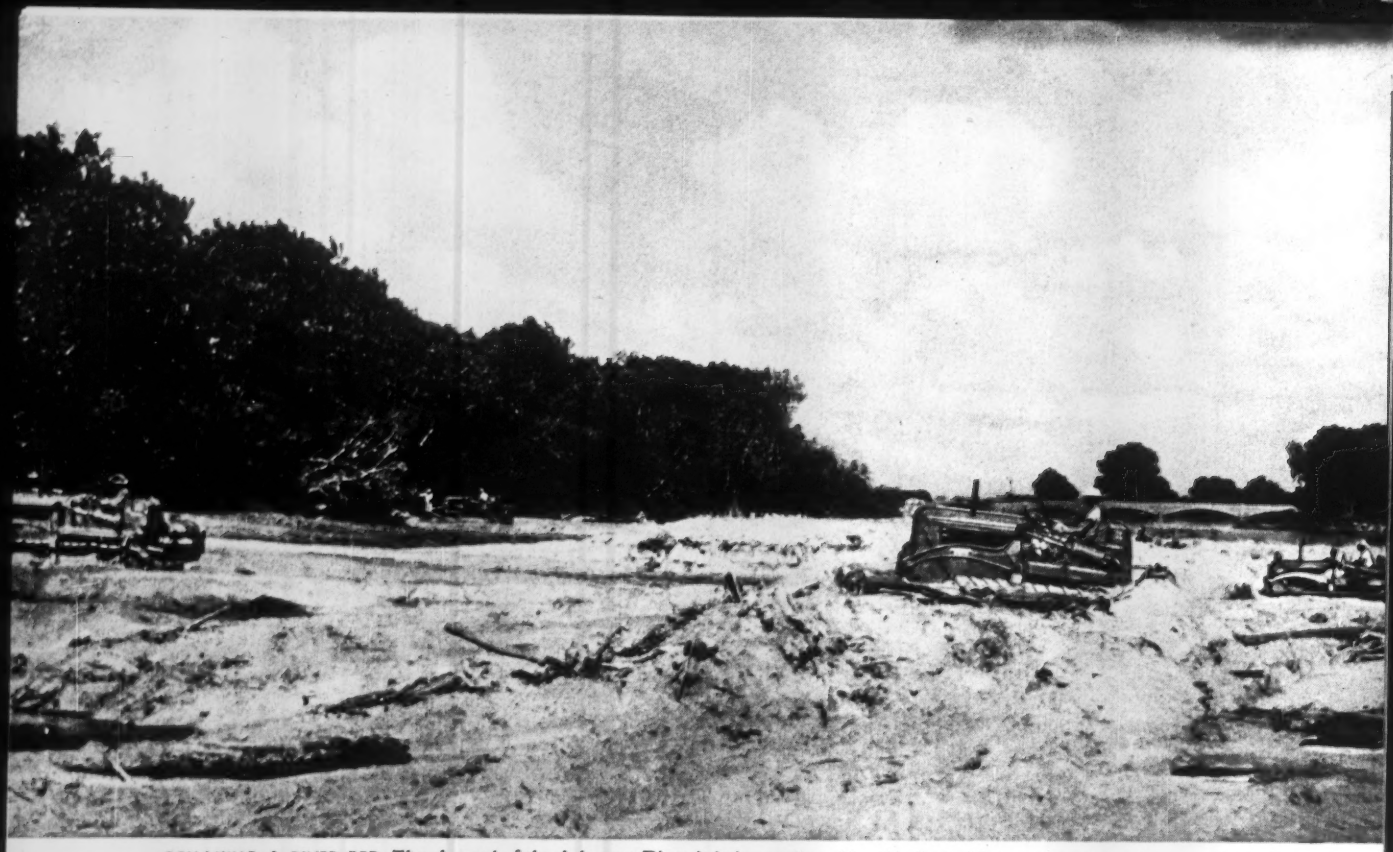
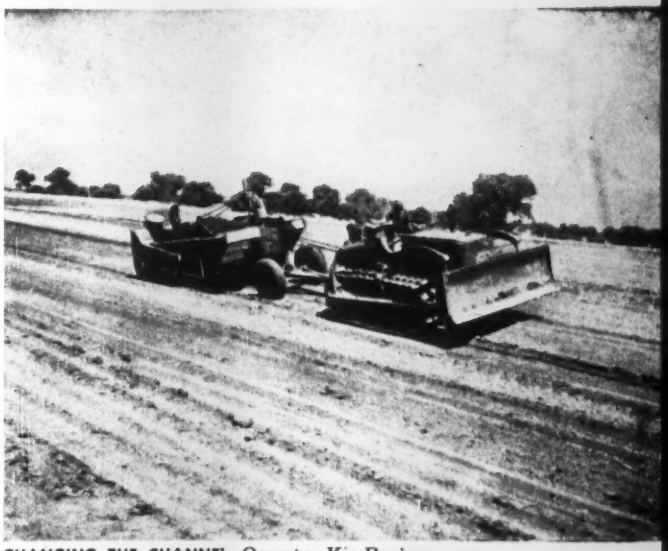


REMAKING A RIVER BED. The channel of the Arkansas River is being realigned by this fleet of International crawlers owned by the C. W. Kelley Transport Company, Inc., and Rush Construction Company, shown cutting new channel through section of island.

Speeds up Sleepy River

RIVER CROSSING. International crawlers reach islands to start re-channeling work by building earth ramps across the river. They worked in sand and water throughout the summer with no downtime.



CHANGING THE CHANNEL. Operator Kie Bayless says: "These TD-14As have more 'soup' than any other tractor their size. They just plain move more dirt."

International crawlers speed up flow of Arkansas River as safeguard for Kansas wheat belt

Flow of the long and lazy Arkansas River is being speeded up one-third along a 30-mile stretch in Reno County as a flood prevention measure aimed at safeguarding the rich wheat belt in this Kansas County.

When the river rises just six feet, and it does periodically, it spills all over the wheat fields and causes extensive damage.

But county officials feel they have a solution. This year they launched the first portion of a proposed three-year plan involving some $50,000 expenditure each year for elimination of bad turns and islands in the river channel. This improvement will increase the flow of the river from 4.06 feet per second to 5.41 feet per second or more and it is felt this faster flow will be sufficient to keep the river in its channel.

Dirt moving for the first-year phase of the improvement is being handled by Rush Construction Company and C. W. Kelley Transport Company, Inc., with rugged red International TD-18A and TD-14A crawlers.

H. M. Dunsworth, job foreman, reports:

"We lug these TD-18As and TD-14As down all the time. They not only have the power and maneuverability to do a bang-up dirt moving job, but that high-speed reverse sure makes us money on this river job as lots of the dozing calls for long pushes. These Internationals, and some have been used for years, have worked over two months here under miserable conditions with absolutely no downtime."

Ask your International Industrial Distributor for details on the whole International line of money-making crawlers. Ask him, too, about his fast, ready service and speedy parts delivery. Get all the answers . . . you'll want International "Power that Pays" from now on!

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READER COMMENT

Grouting Arizona dam

SIR: This is to provide correction of statements made in "Grouting Stops Arizona Dam Leakage" in the April 30 issue, p 27, and to amplify that article.

The project for rehabilitation of Stewart Mountain Dam consisted of grouting a portion of the arch, buttresses, and left gravity section, adding a concrete block to the left buttress to increase sliding factor, metallizing the spillway gates, and replacing gate seals. The total cost of this was about $200,000. The cost of grouting was about $32,000 rather than the amount stated.

The article infers that the grouting was done to prevent leakage through the dam. Such is not the case primarily. The concrete in this dam is subject to alkali-aggregate reaction. This reaction has caused an expansion or growth in the concrete which has resulted in the movement of the arch upstream about 5½ in. rather than 10 in. as stated in the article.

It has been determined that the alkali-aggregate reaction progresses faster and is more active when the concrete is saturated. Consideration has been given to waterproofing the upstream face to reduce the amount of seepage into the concrete mass but as yet, from such tests and investigation as have been made, satisfactory means of waterproofing have not been found.

It is known that much of the water that penetrates the mass seeps into the horizontal construction joints, which occur at five-foot intervals. At the time this dam was constructed, concrete of high slump was accepted and considerable laitance occurred at the joints. Joint treatment did not result in water-tight construction. It was thought that by drilling and pumping grout into drill holes, much of the seepage into the concrete would be stopped and thus retard or stop the alkali-aggregate reaction.

Only part of the arch, the left buttress, and the left gravity section were drilled and grouted, since the work was more or less experimental to determine the effectiveness of such grouting. The grouting has not stopped leakage as much as desired yet, but insufficient time has elapsed to determine effectiveness.

In drilling it was found that on reaching certain joints, there would be a noticeable loss of drill water, but after some further drilling, the loss of water would cease. Upon attempting to grout the hole, it would take but very little grout. It has been concluded that, where these instances occurred, the construction joint around the hole had been sealed with the material ground up in drilling and washed up between the pipe and the hole.

If any further drilling and grouting is contemplated, a means of washing the drill material up the inside of the pipe, rather than outside, will be attempted in order to reduce chances of sealing cracks adjacent to the hole and thus precluding the filling of cavities and voids beyond the hole during grouting operation.

I also wish to state that only the grouting and concrete work was done by contract with Fisher Contracting Company, all gate rehabilitation being done by District forces.

T. M. MORONG
Chief Engineer
Salt River Project
Phoenix, Ariz.

Who's first on the street?

SIR: After reading your article on pedestrian traffic control in Denver and elsewhere I feel impelled to point out a few fundamentals which seem to get lost from time to time but which to students of traffic problems always, eventually, make themselves felt.

For one thing, streets are for people, not just those who are momentarily on wheels. And nearly all traffic control schemes treat the pedestrian as a stepchild. The result is that once a man has found a parking space and becomes a pedestrian he regards traffic controls as a nuisance—with consequent enforcement trouble.

Of course this condition is not all bad, either, as witness the conditions in New York City where the rule seems to be "every man for himself" and relatively few get themselves killed. Of course this observation just points out another fundamental—there is no substitute for alertness. No system of traffic control will safeguard the "woolgatherer" whether he be afoot or awheel.

To return to the pedestrian control aspects of this subject once more, it is one thing to force a motorist to wait in his car for a minute or so, but to force a pedestrian to wait in the rain during several phases of a cycle is something else again. A man walking briskly can cover a block a minute in most cities. And some of

(*Continued on page 15*)

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THEW LORAIN.

Insulated panels of —used effectively

INSULATED PANELS of U·S·S 17 (Type 430) Stainless Steel and face brick make an eye-appealing combination on this elevation of the National Malleable and Steel Castings Company Technical Center. Glass block and corrugated glass are also used on the building.

Technical Center, National Malleable and Steel Castings Company, Cleveland, Ohio.

Architects and Engineers: Dalton-Dalton Associates, Cleveland.

General Contractor: The Leonard H. Krill Company, Inc., Cleveland.

Panel Fabrication and Erection: The H. H. Robertson Company, Pittsburgh.

Bill of Material

STAINLESS STEEL PANELS AND FLASHINGS

1. 1730 sq. ft. insulated "Q-Panels" (#3 Section), 20 gauge, Type 430, #2D Special Finish, and #8 Section, 18 gauge, metal coated steel, plus 1½" fiber glass insulation.
2. 7449 sq. ft. insulated Wall Panels, Type 430, #2D Special Finish, and 1" tectum insulation.
3. 32 Special Formed Mitered Corners —20 gauge, Type 430, #2D Special Finish.
4. 2 Special Formed Scuppers, 20 gauge Stainless Steel.
5. Approximately 3002 lin. ft. various formed up flashings—20 gauge, Type 430 Stainless Steel.
6. Approximately 750 pieces standard notched corrugated closers, 20 gauge, Type 430 Stainless Steel.

STAINLESS STEEL FASTENERS

1. ⅜" x 3" RHSS Bolts (Fasten Panels to Girts).
2. ⅜" x 1½" RHSS BOLTS.
3. #12 x ¾" RHSS Wood Screws.

U·S·S 17 (Type 430) Stainless Steel with other materials—highlight this new technical center

RECENTLY completed for National Malleable and Steel Castings Company, Cleveland, Ohio, this combination office and laboratory building demonstrates how effectively insulated panels of U·S·S 17 (Type 430) Stainless Steel can be combined with other wall materials.

In many previous applications, insulated Stainless Steel panels covered the entire exterior wall surface of the buildings, but here the architects have used this modern material in conjunction with face brick, glass block and heat-absorbing corrugated glass.

The new National Technical Center—with 18,400 square feet of office area and 14,012 square feet of laboratory area—is of concrete and steel frame construction. Stainless Steel panels cover approximately 9,000 square feet of surface.

Since the structure is completely air-conditioned, the low heat transmission coefficient ("U" factor) of these insulated panels is extremely important. And insulated panels of Stainless Steel have a host of other advantages to recommend them—striking beauty, superior corrosion resistance, freedom from costly maintenance, quick erection without regard to weather conditions, and an initial cost well in line with comparable materials.

For full information on this modern material of construction, send for our new book containing the latest data on construction with panels of U·S·S 17 Stainless Steel. Use the coupon below.

EVEN SEVERE WINTER WEATHER didn't halt erection of Stainless Steel panels on this laboratory and office building. Fast erection without regard to weather conditions is only one of the advantages of this type of construction.

United States Steel Corporation
525 William Penn Place, Room 2815-G
Pittsburgh 30, Pa

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☐ Please arrange to have fabricators of Stainless Steel wall panels send me literature on their particular type of construction.

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Address .....

City ..... State .....

United States Steel produces only the Stainless Steel sheet and strip from which panels of this type are made; the panels themselves are fabricated by a number of our customers.

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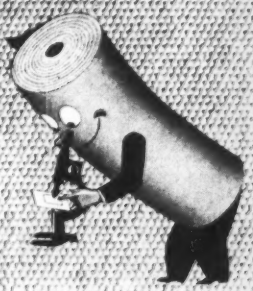

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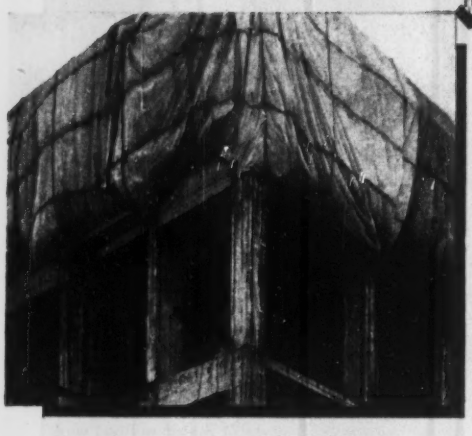
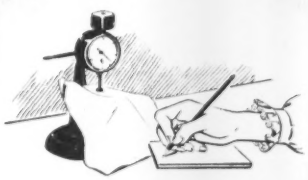


One of a series of comprehensive laboratory controls throughout production to assure uniformity in all Mt. Vernon-Woodberry products. Here fabric thickness after weaving is being gauged.



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READER COMMENT

the "modern" traffic control systems force him to wait a minute each block. He just will not and there is no good reason why he should.

The third fundamental factor which seems to need repetition is that limited street space should be allocated on a priority system, formal or informal, governed by the public—not private—convenience. This order of priority is:

(1) John Q. Citizen, afoot.
(2) Common carriers of passengers and freight, since these common carriers can serve all and exclude no one.
(3) Contract carriers of passengers and freight, since their services are available to many but not to all.
(4) If any space remains, private vehicles, passenger and freight.
(5) For marginal space only, parking.

This points out well the historic function of streets as public ways to serve the public convenience.

JOHN G. KNEILING
Engineering consultant
Staten Island, New York

CALENDAR

Summer program in Advanced Strength of Materials, M.I.T., Cambridge, Mass., July 6-17.

City and regional planning programs, M.I.T., Cambridge, Mass., Aug. 21-Sept. 4.

Noise reduction program, Acoustics Laboratory, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 24-Sept. 4.

Joint meeting International Association for Hydraulic Research and Hydraulics Division of the American Society of Civil Engineers, University of Minnesota, Minneapolis, Sept. 1-4.

American Concrete Pipe Association, annual short course school of instruction, Sherman Hotel, Chicago, Ill., Sept. 10-12.

American Institute of Parts Executives, Denver, Colo., Sept. 13-18.

American Concrete Pipe Association, executive committee, Castti Harbour Hotel, Bermuda, Sept. 19-30.

National highway conference of county officials, American Road Builders Association, Lake Delton, Wis., Sept. 24-25.

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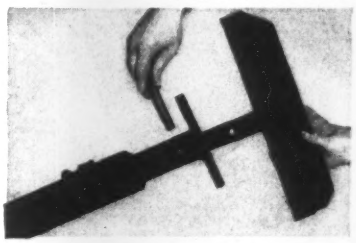

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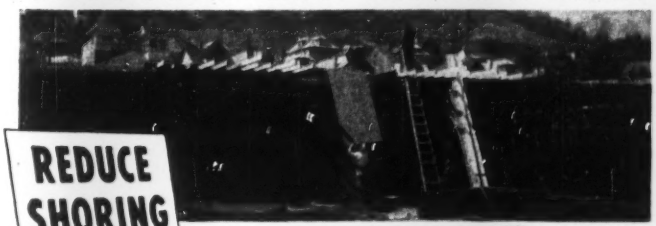

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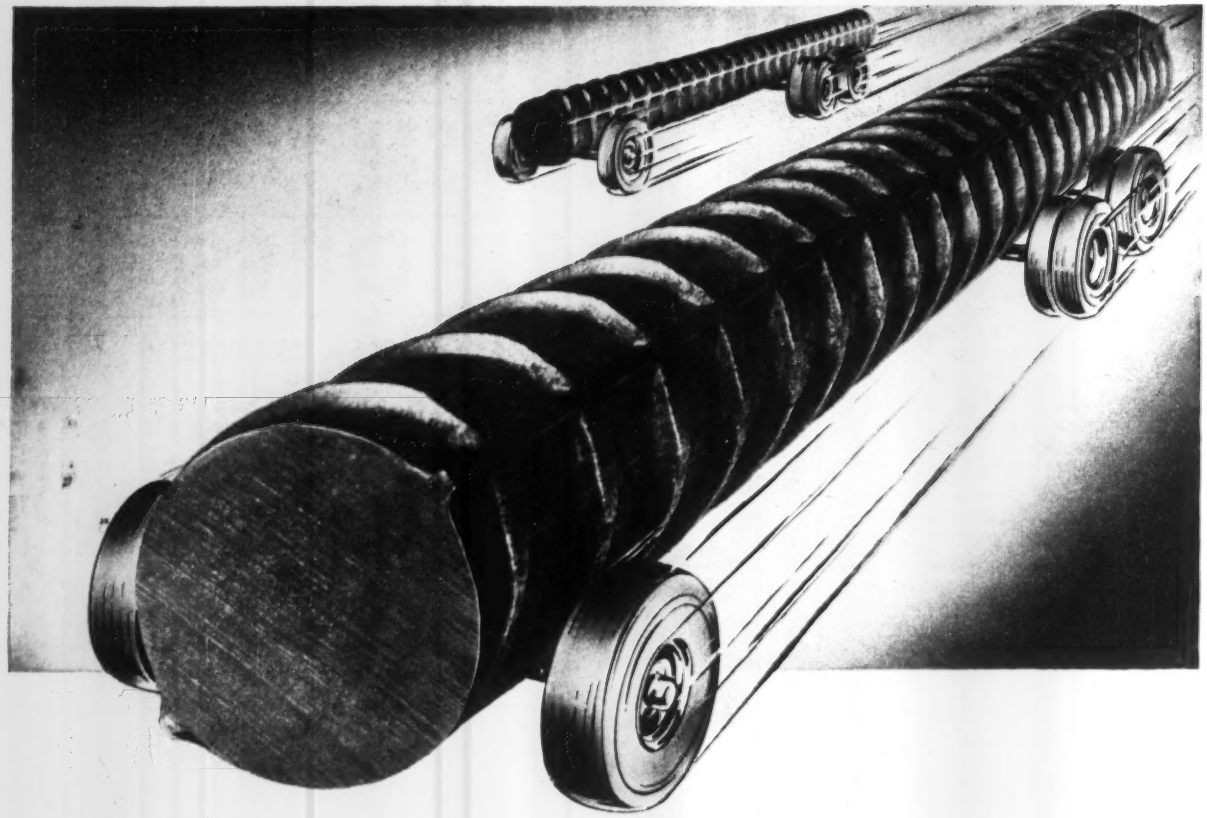

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- **Trouble, double trouble**—It's just one thing after another for the Ohio Turnpike Commission. Finally able to proceed with paving contracts after the State Supreme Court upheld its right to limit bidding to Portland cement concrete, the commission now has run into a serious problem of too-high bids and too-few bidders.

  Contracts for the first section of roadway to be awarded following the court decision were 17.5% over the engineering estimate. Bids for the second section, rumored to have been more than 40% above estimate, have been rejected.

  The condition is blamed on the stepped-up schedules forced on contractors by the delay due to the prolonged asphalt-vs.-concrete litigation.

- **Pipeline mixup**—Tennessee Gas Transmission Co. has tossed a hot potato to the Federal Power Commission: If FPC will give a go-ahead on a natural gas pipeline to Canada, Tennessee will stop fighting for the entire New England natural gas market.

  A Tennessee subsidiary, Northeastern Gas Transmission Co., has built lines serving half the New England area.

  It has been contesting the right of the Algonquin Gas Transmission Co., a predominantly locally owned company, to serve the other half. Algonquin built some $50 million worth of pipeline before a court decision halted the work, holding that FPC had erred in not fully hearing an earlier Tennessee application. Both companies went back to FPC and asked that a ruling be made.

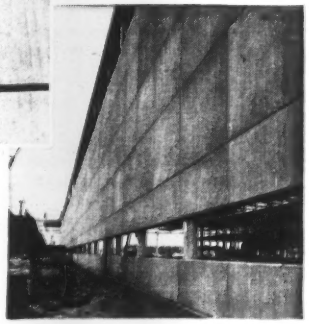
  If FPC goes for the novel proposition, Tennessee will construct a line from lower New England to the Canadian border at a cost of $92 million.

  Algonquin will complete $3 million worth of work in New England. Other work by Tennessee in connecting systems in Kentucky, Pennsylvania and Tennessee will bring total construction to around $100 million.

- **Flood aids cause**—Supporters of the controversial Sun Butte Dam on the Sun River in Montana got a good talking point for their project when the stream went on a rampage in June, flooding a section of the city of Great Falls.

  The dam would be located in a game preserve and is bitterly opposed by sportsmen, who appeared to have won their point until the recent flood changed the situation.

  H. D. Aldrich, Upper Missouri district manager for the Bureau of Reclamation, says the proposed project in conjunction with another dam in the area, could have controlled 60% of the runoff from the Sun River. Canyon Ferry Dam, now nearing completion, was credited with cutting down the flow of the Missouri, thus curtailing the intensity of the flood.



169,000 Sq. Ft. of Precast 'Incor' Concrete Wall Panels in New Grumman Aircraft Plant

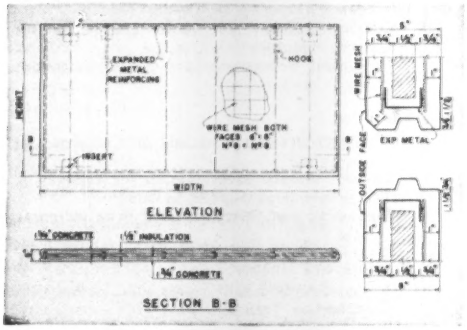
● A sixth Grumman Aircraft plant is being built on a 4700-acre site, on eastern Long Island. The accent is on speed with economy, through the use of 169,000 sq. ft. of precast insulated wall panels, in a complete wall system which is fire-safe, durable, weather-resistant—2500 sq. ft. erected per 7-hour day, with one crane and crew—6 sq. ft. a minute!

Cost is less than usual masonry construction. Size and texture of units give architectural effect and appearance considered by many as superior to high quality cut-stone. Highly-mechanized casting operation gets utmost production speed by using 'INCOR'* 24-HOUR CEMENT. Panels are lifted 18 to 24 hours after casting, placed in curing room for 2 days, then stored in yard. Dependable 'Incor' high early strength assures clock-like schedules.

Another demonstration of assembly-line methods applied to construction—a potential of great significance in the light of today's building costs.

*Reg. U.S. Pat. Off.

Size, texture and quality of panels produces appearance considered by many as superior to high quality cut-stone—cost is less than usual masonry construction. Above, wall of main building, left, power plant. Panel detail, below.



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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 129,000,000 SACKS ANNUAL CAPACITY

The military's construction plans have gone through several wringers since the first of the year. The new team at the Pentagon, at the White House, and in Congress have each been taking whacks at the multi-billion-dollar package inherited from Truman.

The review process is almost continuous and will keep changing as the new team crystallizes its ideas of how to build the quality and quantity of military strength to back up U. S. world leadership.

The first culling of construction—the Wilson "freeze"—is about finished. This Pentagon freeze and thaw was to give a complete review of some $4.7 billion of construction—all the Army, Navy, and Air Force projects in the planning stage, and including projects under construction that were less than 20% complete.

More than $700 million was struck out of the program by the three services themselves—and Frank Creedon's office cut more for the Secretary of Defense.

•

Despite the freeze and thaw, the military asked for $400 million in new money to finance bases needed for the expansion of the Air Force. These projects were authorized previously by the armed forces committees and the Congress, and the Wilson review.

The House Appropriations Committee this week allowed only $240 million to be spent for these bases. Furthermore, it told the Pentagon to finance them out of Air Force carryover funds.

•

This whack at the Air Force buildup gave the Pentagon a jolt. And it helped trigger their submission of the new construction package that Congress hadn't seen yet—the $529-million bundle just handed to the lawmakers (see page 24).

Wilson wanted to show that military construction is all one bundle and that he can't finance everything out of the carryover. So he whittled the new package of authorization requests down to what is regarded as a minimum—and sent it along without waiting for the new Joint Chiefs to go through this new program.

The armed forces committees will try to begin hearings before adjournment but obviously the authorization can't be voted out of committee before next January. By that time, the new Joint Chiefs will have given them another going-over, and they'll be changed some more.

Target of congressmen is the $2.8-billion carryover money—funds voted to the military for construction, but not spent as of June 1. Air Force had $1.5 billion of this, Army $900 million, and Navy $425 million. Pentagon's problem is to tie this money down to firm projects deemed essential by the new team—which is why Wilson sprang the new $529-million package now, instead of later.

•

Anti-union legislation made little progress in state legislatures this year. Forty-four legislatures met—and unions came off even, if not better than even. Example: No so-called "right to work" law was voted prohibiting the kind of union security prevalent in the building trades. A half-dozen were introduced but all were beaten or pigeonholed.

To labor's benefit, minimum wages were raised in several states, and Oklahoma and Kansas covered occupational diseases into their workmen's compensation laws.

SHOPPING CENTER GETS A BARGAIN

Pre-cast concrete facing slabs give inviting appearance at low cost

There's good, sound planning behind the use of sparkling white architectural concrete facing slabs in this modern shopping center to help attract customers. Enduring, clean-cut beauty is achieved with pre-cast panels made with special aggregates in a matrix of Atlas White Cement. The large, easily placed units facilitate design, reduce construction time and labor, and speed occupancy. Durable architectural concrete also means a minimum of future maintenance.

More and more architects are specifying versatile facing slabs made with Atlas White Cement for commercial structures. Such pre-cast slabs offer the utmost in design flexibility... are tailor-made with appropriate aggregates and pigments to secure the color, texture and form desired. Atlas White Cement is a true, uniform white that enhances the rich color values of both pigments and aggregates... it is preferred by slab manufacturers.

Atlas White Cement complies with ASTM and Federal Specifications. For further information see SWEET'S Catalog, Section 12g/Un and 3d/Un, or write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Ave., New York 17, N. Y.

LARGE architectural concrete facing slabs minimize the cost of pointing and setting . . . provide built-in beauty, too. Slabs in shopping center were made with Atlas White Cement and exposed quartz aggregate.

Linwood Park Shopping Center, Fort Lee, N. J.
Architect: Max Simon, New York, N. Y.
Contractor: Sarner & Solow, Fort Lee, N. J.
Pre-cast slabs by The Dextone Co., New Haven, Conn.

FOR BEAUTY AND UTILITY

ATLAS WHITE CEMENT

FOR TERRAZZO, PAINT, SLABS, STUCCO

ENR-WCSL-42

St. Lawrence license granted to N. Y. State Power Authority

House approves private development at Niagara Falls—FPC examiner hearing Idaho firm's Hell's Canyon plan

Significant action was taken in Washington last week on three controversial hydroelectric power developments—St. Lawrence, Niagara and Hell's Canyon—projects involving more than 3 million kw of installed capacity and $800 million worth of construction and equipment.

- Federal Power Commission issued a license to the Power Authority of the State of New York for the $261-million St. Lawrence power project to be built in the International Rapids section of the St. Lawrence River.
- The House voted a measure to enable five New York electric companies to develop an additional 1.3 million kw of power at Niagara Falls at a cost of approximately $400 million. The Senate now has to decide.
- An FPC examiner began hearings on an Idaho Power Co. application to construct a $133-million, three-dam power development on the Hell's Canyon stretch of the Snake River in Idaho and Oregon. Installed capacity would be 783,400 kw.

For each of these proposed projects there were still additional hurdles to clear, and it is not yet possible to say when the first firm contracts can be let.

• St. Lawrence power

Nearest to the construction stage is the St. Lawrence power project for which the federal license is to become effective Aug. 1. A competing applicant for this license—Public Power and Water Corp. of Trenton, N. J.—is already challenging the FPC action.

A suit filed earlier this month with a U.S. court of appeals seeks to bar the license to the New York Power Authority. FPC is asking for dismissal of this suit, but this would not block other attempts for court review.

Both the Trenton concern and the Central Pennsylvania Coal Producers Assn. have indicated they will fight the New York license in the courts. Court review, if granted, could drag over several months or longer. This could well delay major construction activity on the project until 1954.

The St. Lawrence power project approved by FPC consists of the Barnhart Island powerhouse, the Long Sault Dam, the Iroquois control dam and extensive dikes and river channel improvements. New York Power Authority, under the license, would build only the facilities on the U.S. side of the St. Lawrence River. Hydro-Electric Power Commission of Ontario would build the Canadian portion of the project which would have the same amount of installed capacity.

Total project would be vital link in the long-proposed seaway opening the Great Lakes to ocean shipping.

• Niagara power

Huge additional development of electric power on the U.S. side of Niagara Falls received a big push as the House passed a bill which would permit five New York electric companies to do the job.

This measure is now pending before the Senate Public Works Committee and could be reported out at any time. However, a tight legislative schedule between now and adjournment appears to preclude Senate passage this year. Most observers expect a Senate vote on the Niagara power bill early next year, and approval appears likely.

There is still a question as to whether President Eisenhower will clear the bill. He has made it clear he favors full FPC consideration of the project, and wants the regulatory agency to decide who will build and operate the Niagara project.

Only contender for the development, other than the five companies, is the State of New York. Up to now, Gov. Thomas E. Dewey has concentrated his efforts on getting the St. Lawrence power license, and made no serious effort to oppose House action.

Initial development proposed on the U.S. side of Niagara consists of an intake on the Niagara River at Conners Island about two miles above the falls, conduits to a power plant at Lewiston in the Niagara gorge, and installation of some 1,300,000 kw of capacity at the plant.

Preliminary scheme for the project was prepared by the FPC's Bureau of Power, and Army Corps of Engineers drew the overall plans.

• Hell's Canyon power

Most controversial of the three is development of the Hell's Canyon stretch of the Snake River in Idaho and Oregon.

Idaho Power Co. which proposes a three-low-dam development with an installed capacity of 783,000 kw, continued putting its proposal before an FPC examiner this week.

Opposing this application are a number of farm, labor and public power groups in the Pacific Northwest. Their alternative is one high dam with an installed capacity of 900,000 kw which they want the federal government to build.

Turning point in the hearing may come this week or next when the FPC engineering staff presents its analysis of the two proposals. A strong recommendation by the staff would carry considerable weight in reaching a final decision.

No FPC decision on the Idaho power application is expected before late this year.

Dexheimer named to Reclamation post

Will A. Dexheimer has been appointed Commissioner of Reclamation. He had been assistant chief of construction in the Denver headquarters of the bureau.

Dexheimer's appointment comes after a six-month lag in filling the job, one of the biggest in the Interior Department.

An engineer for 27 years, Dexheimer spent two decades in western construction for the Bureau of Reclamation. The rest of the time he filled key posts on World War II and post-war engineering jobs in the Far East and Australia.

Texas engineer Marvin Nichols had been the official nominee; in fact, his selection had been made public by Secretary Douglas McKay. Withdrawal of Nichols was based on his connection with the government's Nicaro Nickel development, which would have aroused controversy.

Baltimore harbor tunnel location set; Hampton Roads crossing decision near

Baltimore jumped into the East Coast vehicular tunnel picture last week when Maryland State Roads Commission announced selection of the route for a 1.7-mile crossing under Baltimore harbor. Meanwhile, Hampton Roads tunnel and bridges, in the Norfolk, Va., area, seemed snagged on minor differences over approaches and financing.

Fourth and last in Maryland's 16-year-old program of toll structures covered by state revenue-bond enabling legislation, the tunnel will connect the Fairfield and Canton sections, about four miles down the Patapsco River (Baltimore harbor) from the city's center. City officials had favored a shorter tunnel closer in, to connect via elevated highway to the new Baltimore-Washington expressway, but the chosen route is considered superior by state planning officials because it will connect the city's two major industrial areas. It also is on a direct line between main highways northward and southward.

Approaches 10.3 miles long will bring total project length to 12 miles. Chosen to handle bond sales is the investment banking firm of Alexander Brown and Sons, which also handled bonds for Chesapeake Bay Bridge, the most recent toll project to be completed under the state's revenue-bond legislation. Other structures are the Susquehanna River crossing at Havre de Grace and Potomac River Bridge, below La Plata. Unofficial opinion of the new project's cost is $70 million, but the State Roads Commission has not confirmed this, saying that an estimate will be announced in about eight weeks, after consulting engineers have made preliminary studies.

Consulting firms include J. E. Greiner Co., Baltimore, Singstad and Baille, New York, and J. K. Knoerle Associates, Inc., Baltimore. In addition, Coverdale and Colpitts, New York, are making traffic studies. The tunnel will have two two-lane tubes. Designs should be ready for bids in mid-1954, contemplating a three-year construction period.

• **Hampton Roads progress**—This same time schedule—a year for design and three years for construction—is expected at Hampton Roads. Substantially following the plan recommended by Howard Needles, Tammen and Bergendoff (ENR Oct. 2, 1952, p. 25), this Virginia project will have an overall length of about 20 miles, of which three miles will be the water crossing from a point near Old Point Comfort to Willoughby Spit, at the Norfolk end. A ferry now connects these places.

The crossing's underwater portion will be 7,200 ft long, of sunken-tube construction. It will be flanked by built-up islands with 900-ft tunnel-to-bridge ramps, and by bridges 2,240 ft and 4,200 ft long, respectively at the north and south ends.

Borings are being made by Raymond Concrete Pile Co., New York, under the supervision of Parsons, Brinckerhoff, Hall and Macdonald, New York consulting engineers engaged by the Virginia Highway Department to design the project and supervise construction. Preliminary estimates place cost at $47 million.

Before designing can get under way, however, it appears that some minor local differences over location must be ironed out.

West Coast truckers end 'park-down' strike over weight limit enforcement

Jubilant North California truckers voted last week to end their nine-day "park down" strike after state officials promised to ease up on strict enforcement of weight-limit laws.

When representatives of the California Highway Patrol told 800 striking truckers at a mass meeting that they would adopt a reasonable attitude towards load limits, the truckers in turn promised to start rolling their rigs out of jammed highway weighing stations.

There were indications that the state's "get tough" policy on load limits would be modified again, allowing a return for the old practice under which overloaded trucks were cited and allowed to proceed.

The strike started Thursday, July 2, when a truck driver named Larry Moseby pulled his rig loaded with huge green saw logs onto the California Highway Patrol's scales near Arcata. He was 1,000 lb overweight on his rear axle.

New CHP regulations, which cut the load-limit tolerance almost in half also called upon overweight drivers to unload down to standard before moving on. Moseby was 40 lbs over the allowable excess. He was told, therefore, to unload a half-ton.

Moseby refused, saying another section of the law prohibited him from loosening the binding chains on a public highway. "If you've got a power saw, I'll slice off one of these logs. Otherwise, I won't move."

Other drivers, some of them overloaded, supported his stand, and by the following Monday some 700 giant rigs were cluttered in and around every weighing station in the Redwood and Douglas fir area. Hundreds of men in mill and wood crews were idled by the dispute.

The truckers retained an attorney to represent them, and the CHP called for aid from the local District Attorney, the Highway Commission, the Public Works Department, the Industrial Accident Commission, and the Attorney General's office. But a series of meetings throughout the week failed to produce any relaxation of the stalemate.

LOGGING TRUCKS parked on Redwood Highway in protest to California Highway Patrol's crackdown on overloads.

The state claims closer tolerances are necessary to cut down damage to the state highways. The tolerance was recently cut from over 5% on a maximum gross vehicle weight of 76,800 lbs to 3%.

Acting Public Works Director Russell Monroe cited a report sent to the governor that maintenance of roads used by loggers cost $2,062 a mile versus a statewide average of $714 a mile.

AEC building rules may be liberalized

Senate committee also favors fund diversion for access highways

Restrictions on Atomic Energy Commission construction will be eased considerably over the next twelve months if the Senate has its way. And the Senate traditionally has called the turn on the bulk of AEC construction spending.

The Senate Appropriations Committee took several steps last week to knock out House-approved strings on construction funds in AEC's annual appropriations. The entire Senate is expected to back these moves.

The committee's most important actions were:

- Loosening the restrictions against building any structure or making any alterations in structures during the year after approval of AEC's budget by Congress.
- Permitting AEC to divert its own funds for construction of access roads to government plants in Ohio and Idaho.
- Giving the commission a green light to start construction during the next year of any atomic plants it deems fit to provide industrial power.

Congress imposed a virtual freeze on AEC's construction plans last year by requiring the commission to start no new structures for which it lacked money to complete in full. This meant AEC was stuck with construction plans, largely drawn up a year or more in advance, after they were approved by Congress when it acted on the commission's annual appropriations.

AEC staffers said this cramped construction operations at the commission's Savannah River production plant, now in advanced stages, and that it probably would hinder work on the Portsmouth, O., gaseous diffusion plant, where construction is just getting under way. Where it developed that unforeseen changes in plans would make such a plant more efficient, the changes could not be made if they added a dollar to construction costs at the project.

The Senate committee retained the limitation but recommended that it apply only to new structures or alterations costing in excess of $100,000.

The committee also recommended that AEC transfer to the Commerce Department's Bureau of Public Roads $10 million of commission funds for access roads to the Portsmouth plant and the commission's testing area at Arco, Idaho. This will permit completion of the Portsmouth-Chillicothe highway in Ohio and replacement of roads in Idaho.

Public Roads previously had asked Congress for money for these purposes, but the plea fell victim to the congressional economy drive.

The House already has approved AEC expenditure this year of $7 million to start construction of an atomic plant suitable for producing industrial electric power and with possible adaptation as a ship-propulsion unit. The Senate committee simply changed the language of this proviso to permit AEC to start more than one such plant.

Atomic test house

Val Peterson, the nation's civil defense chief, wants to build and destroy half a million dollars' worth of structures during 1954.

He asked the House of Representatives Appropriations Committee last week for funds to carry out the research program of the Federal Civil Defense Administration, asserting that studies of atomic blasts on civilian structures have been "sadly neglected."

Here's what Peterson wants to build at the Las Vegas, Nev., Atomic Testing Grounds: A two-story wood frame house, a two-story brick-veneer house, a row house, three shelters ranging from basement corners to small outdoor units, and a variety of racking and framing test units.

The buildings would account for $290,000 of the $447,000 total. The balance of $187,000 would be spent for instrumentation of the test area. Earlier this year (ENR Mar. 26, p. 23) the Civil Defense Administration tested two civilian style buildings.

Atomic power firm formed

Anticipating the day when atomic energy will be made available for civilian use, Atomic Utilities of Arizona has applied to the Arizona Corporation Commission for a statewide certificate to construct and operate service equipment and facilities for producing and distributing atomic-generated energy.

Atomic Utilities has been formed by Lee Ackerman, advertising and development executive, Phoenix; Milton W. Bochat, Phoenix builder; Hubert Merryweather, Santa Cruz County, president of the Arizona Senate; and Alfred Hanson, Phoenix Insurance Company executive.

Ackerman said the company is exploring possibilities of obtaining a franchise to build and install an atomic pilot plant that has been developed by North American Aviation Corp. (ENR June 4, p. 26).

Air Force wants cut in press program

Hopes to get operators to build own facilities or use existing ones

The Air Force is currently mulling over further cuts in its giant press program. Reason: It wants the operators of the presses, which range as high as 50,000 tons, to share more of the costs of the facilities.

In fact the Air Force is now pressuring at least three operators to either house the presses in present facilities or build their own new plants without government aid.

Under the original program, which called for 17 of the giant presses, the cost of facilities to house the presses—eight new forging and extrusion plants—would amount to about $140 million.

The breakdown of new plant costs:

- $8.5 million for Alcoa at Cleveland, Ohio and another $7.5 million at Lafayette, Ind.
- $3 million for Curtiss-Wright at Buffalo, N. Y.
- $21.3 million for Kaiser Aluminum and Chemical Co., Newark, Ohio and $14.5 million at Halethorpe, Md.
- $29.3 million for Harvey Machine Co. at Torrance, Calif.
- $15.5 million for Reynolds Metals of Phoenix, Ariz.
- $43 million for Wyman-Gordon Co., North Grafton, Mass.

The reduced program eliminated seven tools. Kaiser Aluminum and Chemical Company's Newark, Ohio plant was the only one to get written out of the heavy press program completely. Kaiser's Halethorpe, Maryland operation lost one of its two presses; Aloca at Lafayette, Indiana lost one of two; and Harvey Machine Company at Torrance lost three out of four.

What the Air Force wants to do:

- Have Kaiser Aluminum house its remaining heavy press in existing facilities at Halethorpe, Md., thus weeding out $14.5 million in construction.
- Have Harvey Machine Company find space to set up its remaining 8,000-ton press in present plant at Torrance, thus wiping out altogether the planned $29.3-million plant expansion at that site.
- Get Reynolds Metals Company of Phoenix to set up its presses in existing facilities too, thereby knocking out another $15.5 million.

Couple these savings with earlier cutbacks and the Air Force would come up with a net savings in facilities construction of nearly $90 million. Even so, that would still leave about $70 million worth of plant construction in the works.

Pentagon seeks authorization for jobs costing $529 million

The military sent its big new construction program to Congress for approval last week. It called for about $529 million worth of construction at home and abroad, primarily for expansion of existing bases and facilities. The bulk of this work, if approved, would begin during fiscal year 1954.

The long-delayed package was finally broken out of the Pentagon after civilian bosses shaved the totals by perhaps as much as $200 million. In fact, up to the last minute, budget officials were predicting that the requests would not be cleared before Congress quit this session.

The new requests are entirely separate from the money bill for military construction which is already in the congressional hopper. That request for appropriations—calling for as much as $400 million to be voted this month—provides funds for financing completion of projects in the works.

The Pentagon will not need to go to the House and Senate Appropriations Committees for money to finance the new $529-million program, or, at least, that's how they figure it right now. Military construction men figure that these new programs can be financed out of unspent appropriations.

What the Pentagon proposes to do is to finance the new building program out of the $775 million they claimed to have saved in the construction review program. Money already appropriated for previous authorized bases and facilities would be transferred.

It sounds good, but chances are that there will not be enough of the $775 million left to finance the entire amount of this new authorization, should Congress approve it in its entirety. Reason is that the House Appropriations Committee this week looked over the $400-million construction supplemental request of the military, sliced it in half, and then told defense bosses to finance the program out of unspent funds.

Army, Navy and Air Force projects in 41 states account for $375.4 million of the $529-million program. Projects outside continental U. S. account for $52.8 million, aircraft warning and classified projects $101 million.

• **The following summary** gives the amount of construction money requested for projects in each of the 41 states and at locations outside continental U. S., with a list of the major projects **(in millions of dollars)**:

• **Alabama . . . $12.3,** including Theodore Ammunition Loading Terminal, $6.6; Brookley Air Force Base, Mobile, $3.8; Craig Air Force Base, Selma, $1.6.

• **Arizona . . . $5.3,** Davis-Monthan Air Force Base, Tucson, $1.4; Luke Air Force Base, Phoenix, $1; Yuma County Airport, Yuma, $2.8.

• **Arkansas . . . $25,** Naval Ammunition Depot, Shumaker, $1.1; Blytheville Municipal Airport, Blytheville, $9.7; Little Rock Air Force Base, $14.2.

• **California . . . $25,** including Naval Air Station, Alameda, $1.7; Marine Corps Depot of Supplies, Barstow, $1; Naval Air Station, Miramar, $1.2; Naval Postgraduate School, Monterey, $3; Naval Air Station, San Diego, $1.7; Castle Air Force Base, Merced, $1.4; Edwards Air Force Base, Muroc, $1.4; George Air Force Base, Victorville, $1.4; Mather Air Force Base, Sacramento, $1.8; McClellan Air Force Base, Sacramento, $5.6.

• **Colorado . . . $0.56.**

• **Delaware . . . $19.9,** including Dover Air Force Base, Dover, $19.9.

• **Florida . . . $35.9,** including Naval Air Station, Cecil Field, $3.4; Naval Ordnance Unit, Key West, $1; Eglin Airfield, Hurlburt, $4.8; Eglin Air Force Base, Valpariso, $3.7; Homestead Air Force Base, Homestead, $13.3; Patrick Air Force Base, Cocoa, $4.9; Pinecastle Air Force Base, Orlando, $2.5.

• **Georgia . . . $28,** including Kings Bay Ammunition Loading Terminal, $21.6; Marine Corps Depot of Supplies, Albany, $5.

• **Idaho . . . $3.2** for Mountain Home Air Force Base, Mountain Home.

• **Illinois . . . $5.7,** including Plainfield Joliet Site (Air Force), $4.7.

• **Indiana . . . $11.1** for Bunker Hill Naval Air Station, Peru.

• **Iowa . . . $0.97.**

• **Kansas . . . $13,** including Forbes Air Force Base, Topeka, $4.2; Smokey Hill Air Force Base, Salina, $5.6; Wichita Municipal Airport, Wichita, $3.2.

• **Louisiana . . . $5.8,** including Alexandria Air Force Base, Alexandria, $1.2; Barksdale Air Force Base, Shreveport, $4.3.

• **Maine . . . $11.6,** including Naval Air Station, Brunswick, $7.9; Dow Air Force Base, Bangor, $2.1.

• **Maryland . . . $2.5.**

• **Massachusetts . . . $5.09,** including Otis Air Force Base, Falmouth, $5.02.

• **Michigan . . . $1.1.**

• **Minnesota . . . $0.38.**

• **Mississippi . . . $1.8** for Greenville Air Force Base, Greenville.

• **Missouri . . . $4.9,** including Sedalia Air Force Base, Knob Noster, $4.6.

• **Montana . . . $0.435.**

• **Nebraska . . . $15.5,** including Lincoln Air Force Base, Lincoln, $8.8; Offutt Air Force Base, Omaha, $6.7.

• **Nevada . . . $6,** including Naval Auxiliary Landing Field, Fallon, $5.2.

• **New Jersey . . . $12.6,** including Picatinny Arsenal, $1.5; Naval Air Turbine Test Station, Trenton, $3.4; McGuire Air Force Base, Wrightstown, $6.9.

• **New Mexico . . . $10.2,** including White Sands Proving Ground, $2.9; Clovis Air Force Base, Clovis, $2.5; Holloman Air Force Base, $4.7.

• **New York . . . $14.5,** including Plattsburg Barracks, Plattsburg, $10.7.

• **North Carolina . . . $0.28.**

• **Ohio . . . $4.8,** including Wright-Patterson Air Force Base, Dayton, $4.

• **Oklahoma . . . $7.5,** including Naval Ammunition Depot, McAlester, $1.3; Tinker Air Force Base, Oklahoma City, $4.4; Vance Air Force Base, Enid, $1.7.

• **Oregon . . . $0.17.**

• **Pennsylvania . . . $8,** including Naval Boiler and Turbine Laboratory, Philadelphia, $1.4; Olmstead Air Force Base, Middletown, $5.6.

• **Rhode Island . . . $8.9,** including Naval Base, Newport, $4; Naval Supply Depot, Newport, $2.6; Naval Air Station, Quonset Point, $2.3.

• **South Carolina . . . $0.95.**

• **South Dakota . . . $0.89.**

• **Tennessee . . . $10.1,** including Arnold Engineering Development Center, Tullahoma, $10.

• **Texas . . . $43.3,** including Fort Bliss, $8.1; Red River Arsenal, $1.8; Naval Auxiliary Air Station, Chase Field, $1.6; Naval Auxiliary Air Station, Kingsville, $1.5; Abilene Municipal Airport, Abilene, $15.9; Bergstrom Air Force Base, Austin, $1.4; Ellington Air Force Base, Houston, $2.2; Moore Airfield, Mission, $1.3; Perrin Air Force Base, Sherman, $1.3; Randolph Air Force Base, $2.

• **Vermont . . . $0.37.**

• **Virginia . . . $8.5,** including Naval Air Station, Norfolk, $1.8; Naval Air Station, Oceana, $4.4.

• **Washington . . . $2.9,** including Naval Shipyard, Bremerton, $1; Naval Air Station, Whidbey Island, $1.

• **Wisconsin . . . $0.89.**

• **Alaska . . . $10.7,** including Big Delta, $3.9; Ladd Air Force Base, $2; Fort Richardson, $1.6; Aniak Area, $1; Williams Field, Ft. Yukon, $1.

• **Cuba . . . $2.3** for Naval Hospital, Guantanamo Bay.

• **Mariana Islands . . . $2.1** for Naval Air Station, Kwajalein.

• **Okinawa . . . $15.7.**

• **Philippine Islands . . . $21.8,** including Naval Air Facility, Cubi Point, $7.7; Naval Station, Subic Bay, $4.7; Naval Com. Station, $6.2.

Parking garage to cantilever over street

Widening of Congress St. in Chicago, Ill., from building line to building line for a superhighway has inspired the design of a three-deck parking garage cantilevered out over the sidewalk.

As part of the widening operation, sidewalks are to be arcaded through the existing buildings. Stone fronts are set back 20 ft from the new curb line in order to provide space for the sidewalks.

The street-front wall of the new structure will be at the new setback line. Each of the two parking decks above street level will be cantilevered out over the sidewalk 20 ft to bring the front of the structure in line with other buildings on the street.

The garage, 72x144 ft in plan, with a capacity of 200 automobiles, is being built of reinforced concrete.

Continuous bents spaced 25 ft on centers will support floors made of precast concrete Stresterete units. These are beams made of hollow concrete blocks held together by tensioned steel reinforcing bars. Placed side by side, with the spaces between them filled with grout, which also embeds the bars, the block beams form a structural slab. A wearing surface of 1½-in. thick asphaltic concrete will be placed on top. The underside is not expected to require any finishing on the site.

The precast units, erected before the bents are cast, will be supported temporarily on the bent forms. They thus will provide a working platform from which reinforcing steel for the girders can be placed. While the bent shoring must be designed for heavier-than-usual loading, less shoring and form work will be required than for a cast-in-place slab.

The bent concrete will be allowed to enter the block cores for a distance of 12 in. to tie the slab to the girders. The general contract is held by the North American Engineering and Construction Co., of Chicago. Albert R. Hauser is architect and Emanual M. Feinstein, engineer.

Penstock tunnels strengthened with 'tin can' linings

Repair work on penstock tunnels of Pacific Power and Light Co.'s $30-million Yale Project on Washington's Lewis River (ENR Aug. 7, 1952, p. 50) is being done around-the-clock to meet an August target date for placing the first of two 54,000 kw generators back on the line.

Crews of American Pipe & Construction Co., which contracted the lining job, are adding a steel "tin can" within the original horseshoe-section concrete lining on 704 ft of tunnel No. 1 and 846 ft of tunnel No. 2. Both of the 1100-ft tunnels originally were lined with the steel casing for the final 250 ft at the powerhouse ends.

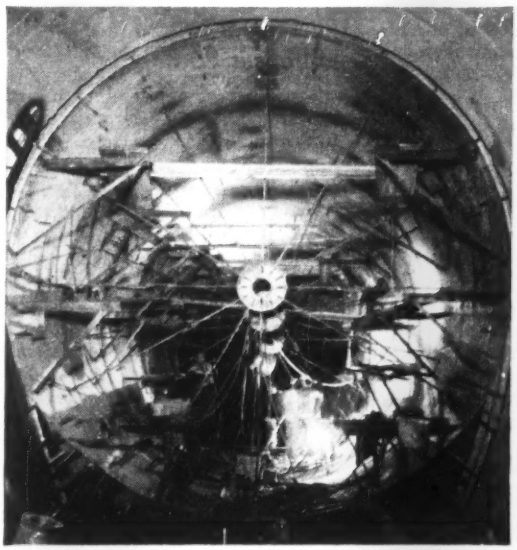
An additional $1 million is being tacked to the project cost by the tunnel repairs, which were decided upon when hairline cracks, attributed to unpredictable movement, were found in the columnar basalt formation through which the tunnels are driven.

To reach the damaged sections, American Pipe drove about an 8x7-ft adit from the down-stream side of the project, 100 ft through the cliff to the first of two parallel penstock tunnels and 50 ft more to the second, then up into them. Through the adit, steel arcs are being hauled on rails in about 8-ft sections.

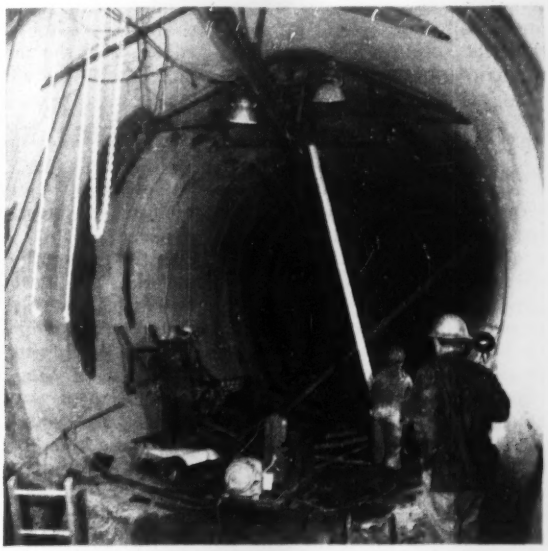
In the 18-ft, 6-in. dia tunnels proper, a rig lifts the steel sections and feeds them either right or left to crews working on each end. A roller jig moves the arcs into working areas where they are joined in rings, three arcs to a ring, and then welded in final position, several rings at a time.

Space between the original concrete liner and the steel is being grouted.

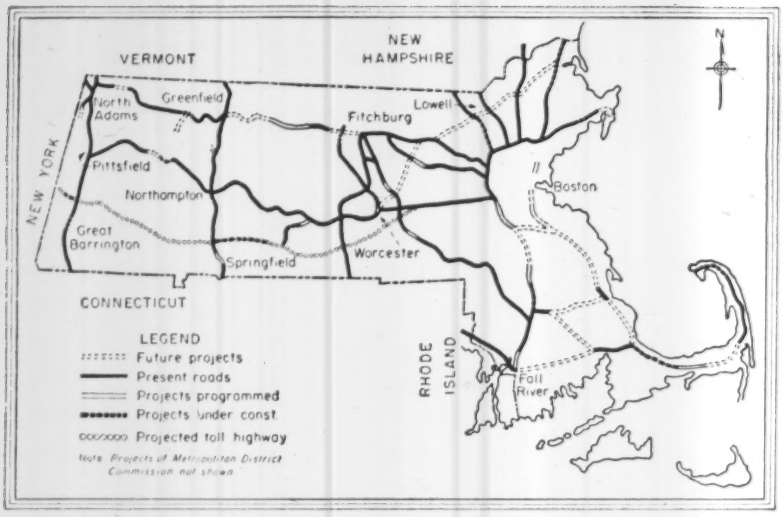
The tunnels are designed for a total pressure head of 330 ft.



WELDING FOUR RINGS into the tin can lining. Each ring, 8 ft long, is composed of three arcs. Each of the two penstock tunnels is 18 ft, 6 in. dia.



OVERHEAD MONORAIL is rigged at entrance from adit into tunnel to lift arc sections and feed to either side of entrance onto roller jigs.



Massachusetts steps up road building

Massachusetts is scheduled to award highway construction contracts totaling more than $87 million over the next eight months. The projects are elements of a master highway plan, involving more than $300 million for state road work and urban expressways.

The new peak in activity comes after a slowdown in contract awards during the first half of the year due to a change in state administration (ENR May 28, p. 27).

According to Public Works Commissioner John A. Volpe, contracts amounting to $64.6 million will be let in the next eight months for state highway work.

In addition, 17 projects designed to alleviate Greater Boston's traffic bottlenecks will be advertised for bids. These projects, costing $22.8 million, will be carried out by the Metropolitan District Commission, headed by Charles Greenough.

Massachusetts has $81 million in highway projects under construction.

The state's toll road authority is trying to iron out final route details for the $200-million turnpike which will link Boston to the New York state line. Its remaining problem is to determine a location agreeable to Boston suburban communities. Whatever the decision, hearings are likely to be necessary before final plans can be approved.

The toll road project is exclusive of the $300-million state highway program. It is provided that the toll road plan take precedence over any present road project which may be in conflict with it. The toll road authority also is empowered to purchase any part of the new roadways which may fit into the adopted route.

$57-million Mississippi River span ok'd

The Mississippi River Bridge Authority has designated Modjeski and Masters of Harrisburg, Pa., as consulting engineers for the construction of a toll bridge across the Mississippi River at New Orleans. Ammann & Whitney will collaborate in the design work.

Action followed approval by the Army Engineers of an application by the Louisiana Highway Department for a permit to construct a bridge between Calliope St. on the east bank and Lamarque St. on the west bank.

Plans call for a 3,000-ft cantilever bridge supported on four concrete piers. The span over the main channel will be 1,800 ft and vertical clearance, 150 ft. One pier will be in the river near the west bank.

Cost is estimated at $57 million, exclusive of most of the approaches involved.

Estimated cost of the approaches, including an elevated expressway on the east (New Orleans) side, is estimated at $30 million.

Frank M. Masters, senior partner of Modjeski & Masters, estimated the preparation of plans will require eight months after completion of soil borings and a report on the project to the state highway department.

Soil borings at the site of the proposed bridge are now being made by the Eustis Engineering Co., foundation engineers.

Actual bridge construction period, he said, will be approximately three years, nine months.

Lesson learned

Fire in skyscraper frame leads to changes in Dallas building code

With the lesson of the costly, and near disastrous Republic National Bank Building fire (ENR April 30, p. 24) still fresh in memory, the Dallas city council last week amended its building code to improve firefighting for buildings under construction.

Under the new ordinance, a builder must install a water standpipe up to the construction level as each floor level goes up. Buildings up to and including six stories in height must have a 4-in. standpipe, and those above six stories must have a pipe 6 in. in diameter. All outlets, connections and fittings must fit fire department equipment.

The old requirements called for water standpipes of smaller diameter, and did not demand installation to be simultaneous with the erection of each new floor level.

The fire on April 18 raked the 19th and 20th floors of the 36-story-high bank building structure just after concrete had been poured for the 19th floor. Huge steel girders were twisted by the heat, and concrete forms crashed into the heavily traveled streets below.

Firemen had no water outlets to work with on the upper floors, and had to piece hoses together to reach the high levels. Twenty-four lines of hose were used to keep the $17.5-million building wet enough to be fire-resistant.

Concrete building collapses, killing 3

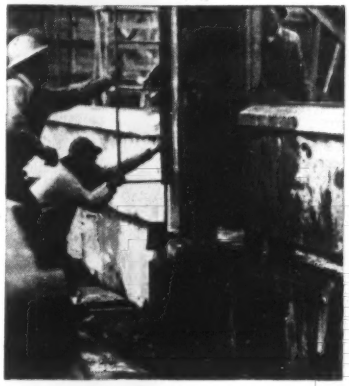
A corner of a four-story reinforced concrete building nearing completion in Scarsdale, N. Y., collapsed last week. Three workmen were killed and ten injured.

No explanation of the cause of the disaster has been offered as yet by the contractor or investigators.

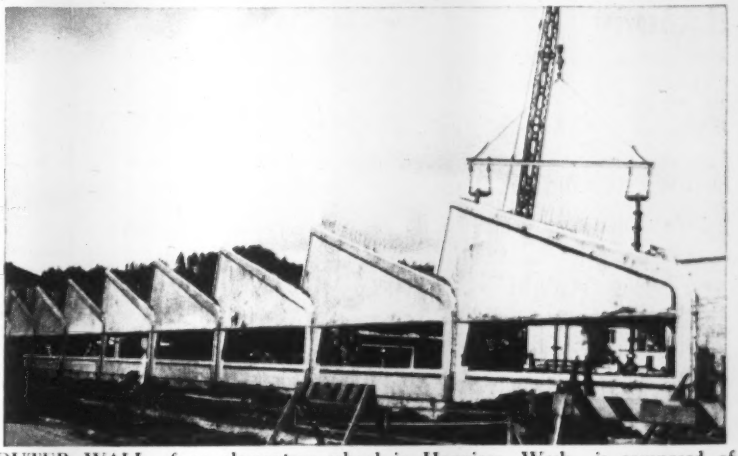
The accident occurred about 6:10 pm. The men were working overtime to complete the pouring of concrete for the fourth floor of the $1.5-million office building.

Hardesty & Hanover, consulting engineers of New York City, have been engaged by the Westchester County District Attorney to investigate cause of the disaster.

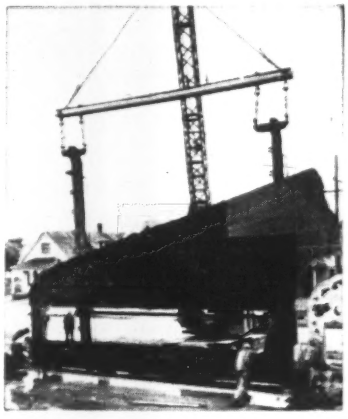
Concrete work was being done by Rizzi Construction Co., of New York City, with Leonard Eastwood as superintendent. Arthur D. Stolle-Delval Corp., of White Plains, N. Y., is the general contractor.



STEEL LADDER on lifting beam helped guide precast panel into place.



OUTER WALL of an elementary school in Hoquiam, Wash., is composed of irregularly shaped precast concrete panels, because of the sawtooth roof.



PRECAST PANEL was cast on the building floor and tilted up by a crane with the aid of two lifting beams.

Novel lifting beams speed tilt-up

Precast concrete panels for the exterior walls of an elementary school in Hoquiam, Wash., were quickly positioned with a pair of unique steel lifting beams. The panels were erected at the rate of two per hour.

Bolted to the panels at frequent intervals, parallel to the vertical edges, the beams were equipped with a steel ladder. This not only made it easy for workmen to reach the bolts and detach the beams, but also was convenient for checking panel alignment.

Panels enclosing classrooms were trapezoidal in shape, to follow the incline of the roof. (The designer, John Graham & Co., of Seattle, Wash., called for sawtooth construction to make the most of natural lighting.) Cast-in-place reinforced concrete columns tied the wall units together.

Construction cost of the 32,349-sq ft, one-story building is estimated at $428,500, averaging $13.25 per sq ft. This figure includes the cost of a pile foundation (about $2 per sq ft). Grays Harbor Construction Co., Hoquiam, is the contractor.

Raritan River clean-up now assured

A long, hard-fought battle was won last week on the banks of New Jersey's Raritan River. The Middlesex County Sewerage Authority signed up New Brunswick as a participant in its $22.5-million intra-county trunk sewer project, thereby assuring the sorely needed facility sufficient financial support.

Efforts to clean up a bad pollution problem in New Jersey's largest river date back a score of years. But the current campaign is the first to bear fruit.

A basin-wide project extending upstream into Somerset County was planned at first. A $30-million project to include a 27-mile collector serving 15 communities and 14 industries was proposed and service charges to finance the scheme were worked out (ENR May 29, 1952, p. 58).

Several prospective participants balked at joining the project—in spite of a very thorough public relations campaign (ENR June 5, 1952, p. 40) that had roused strong local feeling favoring it—the project and engineers for MCSA were told to refigure the project to exclude Somerset County. This they did, and new contracts to support a scaled down project (with the same sewage service charges) were soon ready for signing (ENR Dec. 18, 1952, p. 44).

By signing up big and crucial New Brunswick last week, MCSA got the 90% of potential financial support it needed to go ahead with final design and contract letting on its project. (Only the municipality of Woodbridge still responds unfavorably toward participating in the project, but its acceptance or rejection is no longer a determining factor, with 12 municipalities and 7 industries all signed up at present.)

Meanwhile, the Somerset County group has made clean its split from the original valley-wide authority and hired its own consultants to plan an intra-county project for the upper valley. They came up with a $7.75-million project for complete treatment of up to 28 mgd (ENR June 11, p. 27). A Somerset County sewerage authority that will finance and construct this project is now in the formative stage.

Mississippi legislature to consider school needs

Gov. Hugh L. White of Mississippi has summoned a special session of the state legislature for Sept. 15 to consider a program for equalization of the state's racially segregated school facilities. The matter of teachers' salaries will also be studied during this session.

About $6 million in additional annual expenditures for school construction has been proposed by an interim legislative study committee. To take care of the added expense involved in the overall equalization program, the legislature will consider sales tax increases.

FMCS gets a new director

Newly nominated Director of Federal Mediation and Conciliation Service is Whitley P. McCoy.

It surprised a lot of people when President Eisenhower nominated Whitley P. McCoy to succeed David L. Cole as Director of the Federal Mediation and Conciliation Service. McCoy had these things against him:
- He's a Democrat.
- He's not very well known, nationally.
- He's a professor.
- He's been associated with former administrations on FMCS, and the National Relations Board.

But withal, McCoy reported that he was "well-treated" by the Senate committee that examined him late last week.

• **New leadership, but slow changes**—McCoy is not likely to make any swift or radical changes in the mediation service. He thinks that it is pretty efficient as it stands right now, but that "time and lots of minds" can bring improvements.

President Eisenhower, in his campaign, plumped for a new approach in federal mediation. Eisenhower wanted mediation to prevent disputes from getting out of hand, rather than stepping in when the sides had already committed themselves to "dug-in" positions.

McCoy will be happy to try preventive medicine, but is concerned with an obvious defect in the idea: Such a program would mean federal intervention rather early in a dispute, causing a collapse of direct negotiations.

McCoy is a staunch believer in the value of direct and outside-pressure-free bargaining between management and labor. Federal interference should be kept to a minimum, he thinks.

One idea will meet his opposition: Labor Secretary Durkin's proposal to put FMCS in the Labor Department. McCoy has been opposed to this in the past and he has not changed his mind about it. He rather strongly believes that the service should be an independent agency so that it can gain the confidence of employers, who are prone to believe that the Labor Department accents the labor in its title.

McCoy is not a friend of compulsory arbitration, but he admits that it may be the only solution to the public utility field.

Another idea he may try to get accepted is the conjoining of fact finding and recommendations. Fact finders operating under Taft-Hartley emergency disputes clause could make recommendations that would be very useful in settling a dispute, according to McCoy.

The injunction is distasteful to McCoy, but he would use it in case the national welfare was threatened.

• **Who is McCoy?**—When McCoy's name was mentioned as the successor to David L. Cole (who succeeded the well-known Cyrus Ching) in the post of Director of FMCS, it made many people ask who "the McCoy" was. The quickest—and least informative—answer would be that he is a professor of law at the University of Alabama.

However, McCoy has been engaged in professional arbitration for many years.

For 12 years he did such work for the two successive federal mediation services—first the old U. S. Conciliation Service and then FMCS.

Before that he was a trial examiner for the National Labor Relations Board (1938-39). He was also an arbitrator for the National War Labor Board.

Professional associations include: National Academy of Arbitrators and American Arbitration Assn.—in which he was a vice president.

McCoy, writer of several books on labor relations, is by training a professional arbitrator.

McCoy cannot be tabbed as a labor man or a management man. He has the confidence of both although he has not hesitated to tread on either's toes.

• **Biography**—A Washington, D. C., native, McCoy graduated from Dartmouth in 1916.

After World War I service in the Navy (highest grade: Lt. JG.) he got a law degree at George Washington University. Except for short periods of private practice he has since been on the staff of the University of Alabama.

• **Eisenhower's choice**—The nomination of McCoy left the President with one more top federal labor job to fill: Chairman of the National Labor Relations Board.

Mountain area quiets down as wage agreements spread

Final settlements between carpenters and the Associated General Contractors—or at least their agreements to submit to arbitration—have cleared the way for resumption of construction work in Colorado, Utah and Nevada.

Here's how disputes were settled:

• **Colorado**—Four thousand AFL carpenters in the Denver area have accepted the 15-cent-an-hour wage hike offered by the AGC. The increase—boosting the hourly rate to $2.77½—is 2½ cents less than the carpenters were bargaining for.

The settlement removes the last major threat to a tie-up of Denver construction. Most other crafts have reached agreements, although a week ago over 1,100 painters went on strike—without picketing—in support of their request for a 15-cent hike now and 11 cents more in January.

• **Utah**—The work picture is back to normal, with AFL carpenters and the AGC Intermountain Branch agreeing to submit their dispute to arbitration.

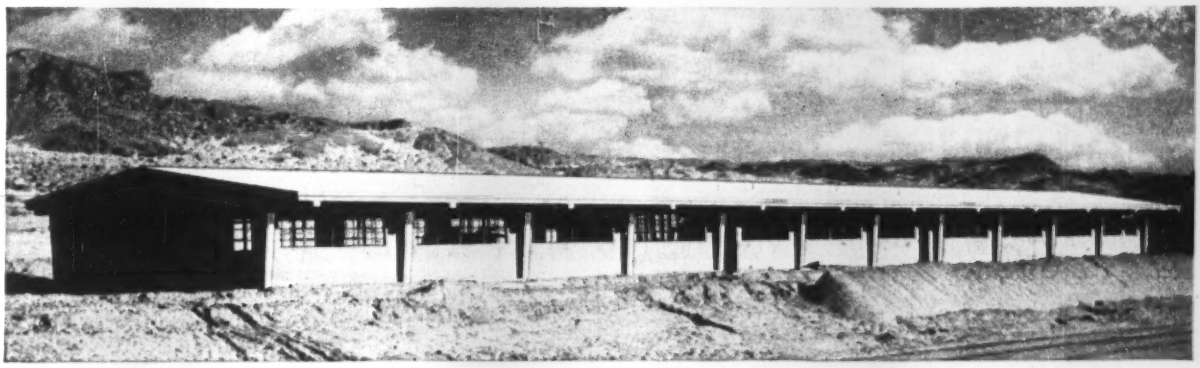
Work stoppage—which lasted four weeks and involved 15,000 construction trade workers—eased earlier when laborers, sheet metal workers, concrete finishers and other crafts signed wage agreements calling for 15-to-25-cents-per-hour increases spread out over a year's period.

Carpenters in northern Utah returned to work on an offer of an immediate 15-cent hourly boost, plus another 10 cents beginning Jan. 1. Salt Lake City area carpenters, holding out for a better settlement, went back on the basis that 15-cent-an-hour increases be credited toward whatever final arbitration agreement is made.

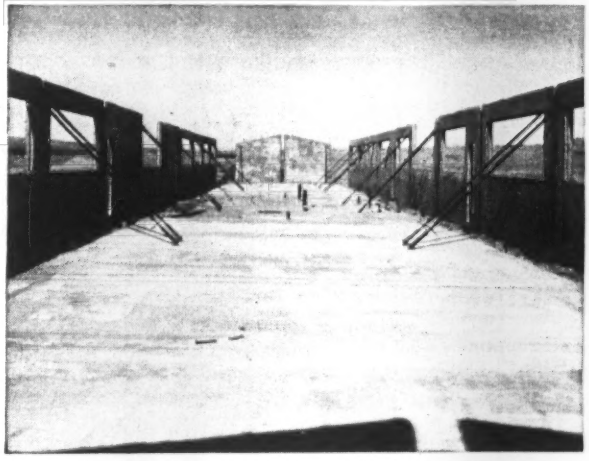
• **Nevada**—Construction in the western area is back in full swing following settlement of a three-week carpenters' strike.

Reno carpenters, spearheading the walkout, won full demands and were granted a wage increase of 17½ cents an hour. It sets the hourly base pay for journeymen carpenters in the area at $2.80—one of the highest in western states.

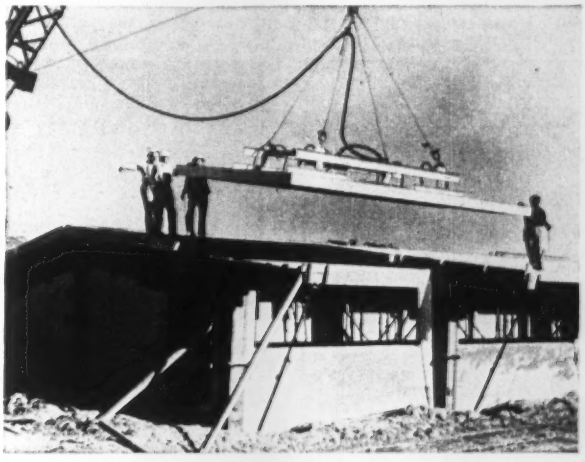
Capitulation on the part of AGC came only 48 hours after it formally resolved to grant no pay increase. The turnabout came when J. A. McNeil Co. of Los Angeles and the Chemical Construction Co. of New York agreed to pay the full $2.80.



General view of one of the completed barracks buildings.



Construction view showing wall panels tilted up and braced.



Precast concrete roof slab being lowered into place.

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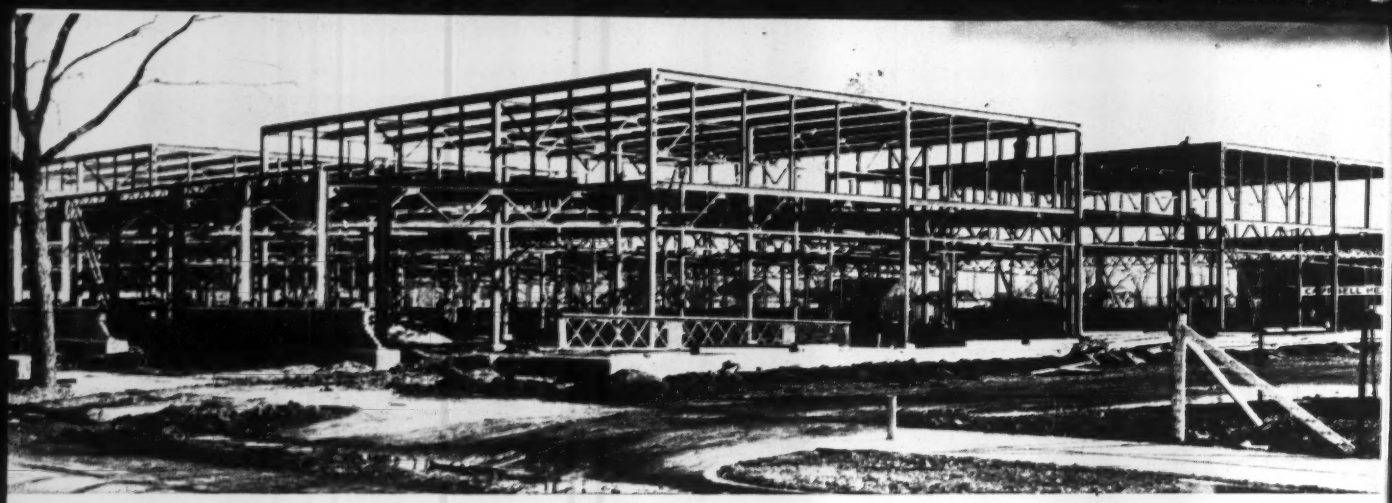
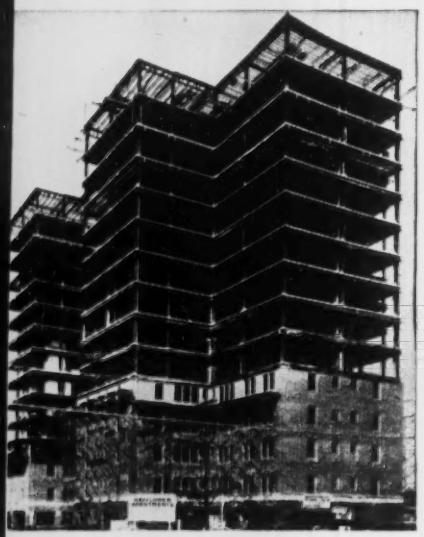


Exposition Buildings, Des Moines, Iowa



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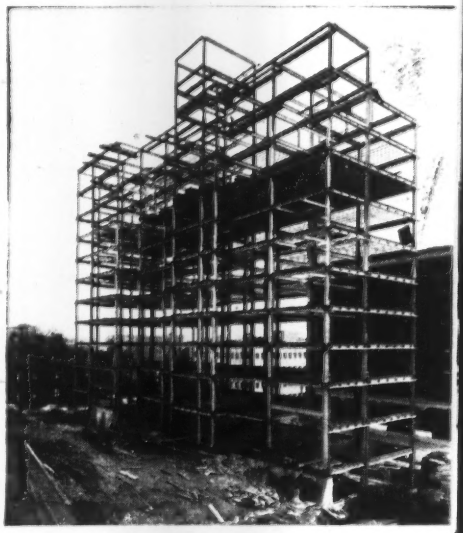

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California contractors fight strikes by $500-million project shutdown

AGC members form strategy committee to withhold supplies and talk contractors into cooperation

The construction shutdown ordered by directors of Northern and Central California chapters of the Associated General Contractors has been upheld unanimously by representatives of 350 contracting firms at a general membership meeting.

The shutdown—which AGC predicts will halt $500 million worth of construction—started June 23 in retaliation against "selective" strikes called by the AFL laborers' union to reinforce demands for a 15-cent hourly wage boost.

Now, with association members firmly behind the shutdown action, the contractors have formed a strategy committee. The chairman is Robert McCarthy, member of the Central California chapter's board of directors and head of Robert McCarthy Co., San Francisco contracting firm.

• **Discipline**—Those contractors not supporting the shutdown are being hit on two fronts:

First, strategy committee members are meeting with them in an attempt to bring them into the fold.

Second, their supplies are being held up.

The AGC has also established local information committees throughout the 46-county area covered by the shutdown. These form a liaison between the San Francisco office and contractors from Fresno to the Oregon border.

The Readymix Concrete Co. has announced it will suspend operations at its San Francisco plant. The firm's president, C. J. Ainsworth, says "We have the orders but can't deliver the concrete because of the shutdown."

A spokesman for Pacific Coast Aggregates, Inc., says that the company's plants are operating on a curtailed basis throughout the shutdown area.

Work is continuing at the $62-million Richmond-San Rafael Bridge, but the AGC is intensifying efforts to close it down. Laborers have walked off the picketed project but pile driving—done by members of the carpenters' union—and the engineering work are still in progress.

On the San Francisco peninsula, the Peninsula Builder's Exchange—representing 385 small contractors—announced that they oppose signing individual wage agreements with the union but are in favor of continuing work. Home builders who have not been struck are still in operation. (This building group is not a signatory member of the AGC.)

Newest shutdowns include the Bayshore Freeway Addition and two sewage plants—a $2-million facility at Hayward and a $1-million plant at Gregory Gardens.

• **Union hits back**—The union reacted to the general shutdown order with threats of spreading the strike to projects still operating. It placed pickets around the Riverban ordnance plant at Modesto; and more than 400 union members walked off the project, halting construction of a $1-million steel processing plant. Assistant director of AGC labor relations, David Day, says that the ordnance plant was not asked to shut down because Army Engineer Corps representatives—meeting with the AGC strategy committee—requested construction be continued there in view of the plant's importance in making artillery steel casings for the defense effort.

Another victory has been racked up by the union—concession to its wage demands by 140 members of the General Contractors and Builders Association of the East Bay. Laborers returned to work June 29 on the group's projects, including Fairmont Hospital in Alameda County and McClymonds High School in Oakland.

A collapse in negotiations between laborers and the AGC on May 26 led to the "selective" strike action. The union continues to seek separate agreements and claims to have won demands of a $2 hourly wage (a 15-cent addition to their $1.85 basic wage) from 60% of the contractors. The AGC stands firm on its offer of a 10-cent pay hike, a proposal which follows the pattern set by other AGC contracts, including the recent pact with the carpenters.

Contractors-unions team up in St. Louis

The St. Louis lathing and plastering industry has organized an industry council to stimulate good workmanship and foster union-management peace.

Membership includes the St. Louis Lathing and Plastering Contractors' Ass'n., the AFL Lathers District Council of Greater St. Louis, and AFL Plasterer's Union, Local No. 3.

• **Performance guaranteed**—One of the council's functions will be to serve as a clearing house for questions concerning satisfactory performance of lathing and plastering work.

Any home purchaser, contractor or architect dissatisfied with work done on a structure may take his complaint to the council whose representatives will inspect the work and arrange that the work be done over, or that an adjustment be made, if it is found below standard.

• **Consultation service**—The council's services also will include free consultation with builders, architects and home planners on best use of lathing and plastering for economy, durability and attractiveness. Development and use of products and techniques offering better service and economy will be encouraged.

By encouraging apprentice training, the council will seek to expand the supply of trained lathers and plasterers.

• **The drivers**—The new organization's officers are: President, William H. Anderson, business agent of the plasterers' union, Vice President, Harry J. Hagen, business agent of the lathers' district council, Secretary, Marshall Charpentier, contractor, and Treasurer, George F. Robertson, Jr., contractor. Jerome F. Duggan is attorney and legal representative.

The St. Louis Lathing and Plastering Industry Council is affiliated with the Lathing and Plastering Industry International Council, Washington, D. C.

One wary bricklayer

Something's amiss in the state of Denmark—there's only one unemployed bricklayer! The latest census taken within the Danish building industry uncovered the fact, and the Ministry of Housing's line of action is clear: Be cautious in permitting new public building. The result is that authorized state and municipal construction projects (to the tune of some 100-million kroner) will be set aside until next winter.

Wage case end is in sight

Remaining 200 violation cases will mark end of wage salary control enforcement

President Eisenhower suspended wage and salary controls on Feb. 6, and the law authorizing them expired April 30, but the memory lingers on in the National Enforcement Commission and in the federal courts.

NEC—the agency that decides whether excess wage and salary payments were made under stabilization and what the penalty should be—is trying to close out about 200 cases and call it quits. But its authority has been challenged in the courts.

A dozen employers have obtained restraining orders or temporary injunctions in the last few months to prevent NEC from making a finding in their cases. The Supreme Court just last week denied a government plea to set aside an interlocutory injunction obtained by the Grand Central Aircraft Co. from a special three-judge court in California.

• **Backlog**—Prosecution of employers who violated wage-salary controls during the two years of economic stabilization following Korea is winding up rapidly. After Eisenhower lifted the pay ceilings in February, the Wage Stabilization Board and the Salary Stabilization Board did not begin any new investigation of suspected violators. Hearings on cases already begun have been completed, with the exception of those held up by court proceedings. No more hearings will be held by NEC except on appeal from the findings of hearing commissioners.

This leaves NEC with about 300 cases to clean up. The new chairman of the three-man commissio, Francis J. Kelly, Washington attorney appointed on June 1, is asking Congress for only enough funds to run four more months to get these decisions out. Court litigation is being handled by the Department of Justice, and that may go on for years.

This means that any employer who may have violated wage-salary controls will not feel the hot breath of NEC down his neck. Whether he may have to account later to the Bureau of Internal Revenue or some other agency is doubtful.

Through May, NEC had issued 1,425 certificates to the Bureau of Internal Revenue for disallowance of all or part of a payroll as a cost for income tax purposes. The disallowances add up to $4.5 million. The employers are in a tax bracket averaging 52%, so the actual penalty to employers is $2.3 million.

Most of the penalties were for violating wage ceilings. Less than 500 were fo rexcessive salary payments.

• **Attack**—Grand Central Aircraft, which is accused of violating both wage and salary controls, is making a frontal attack on the whole stabilization program. Among other things, it is alleging that the Korean situation is not a "war" and that the Defense Production Act was unconstitutional.

This company and others are also attacking the procedures and authority of the stabilization agencies under the act. They cite, for instance, the fact that WSB, when it brought action against the companies, was not a tripartite body as specified in the law. The industry members walked out in December and the all-public Wage Stabilization Committee was substituted by the Economic Stabilizer.

They contend, further, that under the Defense Act the government has no authority to impose a disallowance of more than the excess payment. The regulations permit disallowance of an entire payroll that includes an illegal wage or salary increase.

U. S. Hoffman Machinery Co. is raising another point: That NEC has no authority to make determination after April 30, when the wage-salary controls section of the Defense Act expired; that any action thereafter must be brought through the courts under the criminal sections of the act.

Wrangle untangled

A thirty-year wrangle has been ended between the AFL ironworkers' union and the millwrights (carpenters and joiners) over who should install conveyors and materials handling systems. The vague wording of a one-paragraph agreement that has been the root of many disputes has been clarified in a pact that spells out in detail the jurisdiction of each union.

In brief, the ironworkers will erect legs, platforms, hangers and framework for various types of conveyors, from monorails to bulk handling belts. Millwrights will install and adjust the machinery and moving parts.

Company attorneys have obtained a preliminary injunction based on this point, the court agreeing tentatively—for purposes of the injunction at least—that making a formal decision of violation was not a function of liquidation, which NEC is supposed to be undergoing under Eisenhower's Feb. 6 order. The attorneys consider this an important legal precedent in administrative law, if it holds up.

Revision in rules unites union-contractors' board

Harmony is well on the way to being restored among the contractors and union members of the National Joint Board for Settlement of Jurisdictional Disputes.

Nearly everyone was back around the conference table last week. The plumbing contractors are happy with revisions in the board's rules, and the electrical contractors, who've been sulking longest, can be detected edging toward their chairs.

A dues boycott, which for some months has been symptomatic of disagreement, has been pretty well ended.

The rules changes will allow alternates to act in the absence of members, and will bar officers of the Building Trades Department of the AFL from board membership. This has been interpreted as being aimed at Richard Gray, building trades chief, who also is a board member. Presumably the electrical contractors would be happy if Gray were replaced by a member of the electrical union.

Teamsters' strike halting New York City construction

Construction work in New York City was slowly being strangled by lack of material last week.

The material lack was not due to a shortage, but rather to the continuing strike of about 2,000 teamsters who ordinarily drive the material delivery trucks.

It was almost impossible to discover—from the teamsters union—what the strike demands were. Union headquarters refused to answer any questions concerning the amount of increase they wanted.

On the other hand, the employers (dealers in materials) said that they had offered the drivers pay increases of 30 cents an hour, plus about 7 or 8 cents in welfare. This would jack up the present $16 daily rate for driving regular trucks by about $3.

An unconfirmed report said that the teamsters wanted about 50 cents an hour increase.

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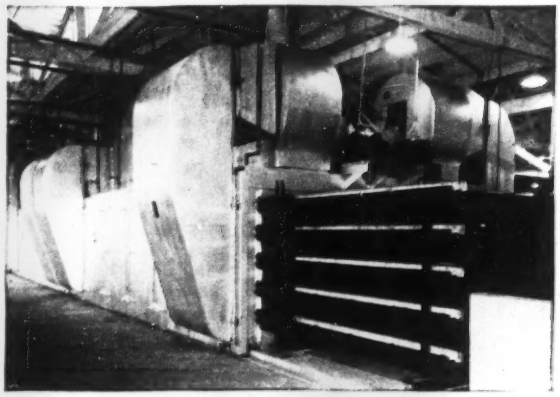

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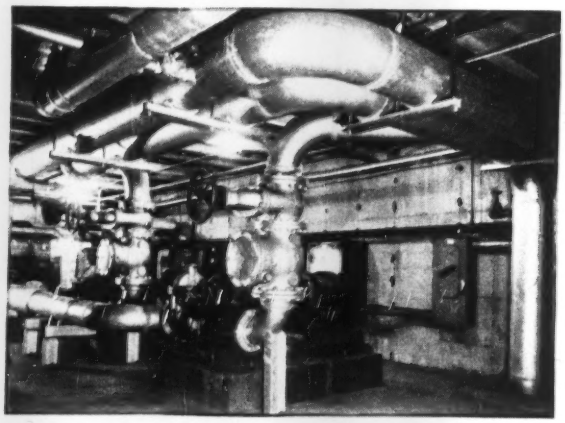

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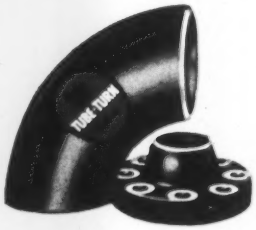

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Meteorologists will give you varied stories of how far they've come toward combining weather histories and the still-new science of winds aloft to get long-range forecasts.

But the fact remains that the U. S. Weather Bureau's monthly forecast has over 3,000 subscribers, while commercial weather prognosticators, willing to go out on limbs stretching as far as six months into the future, are making a business of talking about the weather.

• **A growing business** – Whether they're good, whether they're not; industry is demanding weather forecasts. This includes construction.

Contractor, water company, power company, highway department, materials and equipment manufacturer—all could profit in dollars and cents by knowing what weather lies ahead. Will the construction season in a given area be short or long, wet or dry, mild or severe? And on the short-range: will tomorrow be too windy for roofing work, too dry for easy concrete finishing?

The same kind of information can mean money to brewers, air-conditioning manufacturers, fuel oil suppliers, cotton growers, soft drink and ice-cream makers. Nearly everybody has some stake in the weather.

• **Who's in it**–So popular are forecast services becoming that just this January, Western Union's Collateral Services Division contracted to market services of the National Weather Institute, Inc. (Los Angeles) through its nationwide sales setup.

Already the National Weather Institute lists among its clients such blue-blood contractors as: Utah Construction, Morrison-Knudsen, Ben C. Gerwick, Barrett & Hilp, and Fluor. The Idaho Highway Department (on a test basis), railroads, power companies, water suppliers, and various manufacturers have also employed the service.

Irving P. Krick, meteorological consultant of Denver, puts most of his time into (and gets most of his publicity out of) "weather modification" (controlling rainfall, for instance) these days; but he, too, offers industry long- and short-range weather forecasts. In fact, before he went to Denver to set up shop as a rainmaker, it was Krick who headed the group of meteorologists out of California Institute of Technology that has since become National Weather Institute, Inc.

Wallace E. Howell, the meteorologist New York City hired to seed clouds during water-short 1950 (he claimed 17% increase in rainfall over the areas seeded) has a shingle out reading "Meteorological survey, development and operation," in Cambridge, Mass. He, however, does not feature long-range forecasts.

John E. Wallace of Northeast Weather Service (Lexington, Mass.) also steers away from long-range weather forecasts, limiting predictions to 72 hours where possible, and specializing in exact area forecasts. This has brought him contracts with several New York and New England cities. For several years the firm has supplied district offices of the New York

Boundary between lower atmosphere and stratosphere (60,000 ft at equator; 30,000 ft at poles) below which jet streams swirl, influencing ground-level weather.

WEATHER IS THEIR BUSINESS—NWI, under Meteorologist Rempel at desk in foreground, caters to a variety of people whose business weather affects.

The weather:

U. S. Weather Bureau supplies raw data—you take it from there, with caution—there are limits to what can be done

State Department of Public Works with snow and ice storm forecasts.

• **Company meteorologist**—Another factor in weather prognostication is the company meteorologist. Firms and organizations with operations on broad enough a base and enough of a stake in the weather are finding it profitable to employ their own weathermen. Airlines and a couple of big power companies are the obvious examples.

But to the construction industry it should be more noteworthy that DuPont, as contractor to the Atomic Energy Commission, had a staff of weather experts and a thorough system for disseminating weather information on its vast (45,000 construction workers) Savannah River H-bomb plant project in South Carolina (ENR June 19, 1952, p. 36). What weather factors DuPont considered and how their construction operation was geared to weather forecasts is told below in some detail by W. R. Chalker, of the engineering department, E. I. duPont de Nemours & Co.

• **U. S. Weather Bureau**—Raw materials with which all the forecasting services and individual forecasters work come from the U. S. Weather Bureau. What most of the weather experts do is take data, historical and current as well as forecasts, and tailor them for their own location and needs.

Some do more than others in extending Weather Bureau information.

The bureau, itself, has its Extended Forecast Service, which developed out of an MIT-Weather Bureau research project in the latter half of the 1930's and is now an operation and research unit issuing 5-day forecasts two days a week and a 30-day outlook twice monthly.

Jerome Namias, heading up the Extended Forecast Service, is one of the top men in this field. He explains that long-range forecasters must concern themselves with broad atmospheric currents and average storm paths rather than factors affecting the daily weather map. While it is practical to forecast over a period the amount of precipitation and departures from normal temperature on the basis of upper level prognosis, Meteorologist Namias says it is not easy to break down 30-day or even a 5-day period into daily forecasts. He claims "an accurate play-by-play" may not be possible. But he maintains that the overall forecast can be of value to those concerned with weather over a period.

Such thinking brought the Weather Bureau to its monthly average weather resume and outlook, begun experimentally in 1942. For $4.80 per year the bureau sends subscribers four pages of maps and text twice monthly outlining general areas of the U. S. in which temperature and precipitation will be above or below normal.

It is not a specific, detailed forecast. It is generalized information billed as "most useful when interpreted and applied by an expert." In fact, the text flatly states that "even if the world were covered by a dense network of weather stations meteorologists today would be unable to foretell in detail the weather for the next 30 days."

Among the many contractor subscribers of the Weather Bureau service is the combine of Perini, Walsh, Mills and Blythe Bros. Construction Companies, working on Jim Woodruff Dam in Florida. A. R. Berry, project engineer, says the 30-day outlook does not influence operations decisions but they do depend on 5-day forecasts and local daily forecasts in their work. John H. Walsh and Co., of Jackson, Miss., claims the 30-day outlook has become an important planning factor correlated with 5-day forecasts and local predictions.

• **Modest claims**—The Extended Forecast Section satisfies itself with claiming moderate success at forecasting general patterns over wide areas.

When its map says "much above" or "much below" normal it means temperatures which in the past have occurred only ⅛ of the time; near normal, below and normal are ranges which have occurred ¼ of the time. For precipitation: light, moderate and heavy are three classes having equal probability. All these apply to the given season and the given locality (i.e., light rain in the Gulf States in winter would be heavy rain for Southern California.)

In the published monthly outlook, separate charts give quantitative meaning to these descriptive categories of temperature and rainfall for some 40 places fairly well distributed across the U. S. General patterns, without quantitative figures, are also given on maps of the northern hemisphere.

• **Some claim more**—While Namias and other meteorologists claim that no reliable method of predicting seasonal characteristics has been evolved, there are those (like NWI and Krick) who do make such predictions.

National Weather Institute will not only forecast rainfall and temperature range for six months in advance, but will (and prefers to) tailor-make its forecast for a given place. Accuracy is claimed to be 85%. (Assignment of error factors is an involved process.)

How this service (if claimed accu-

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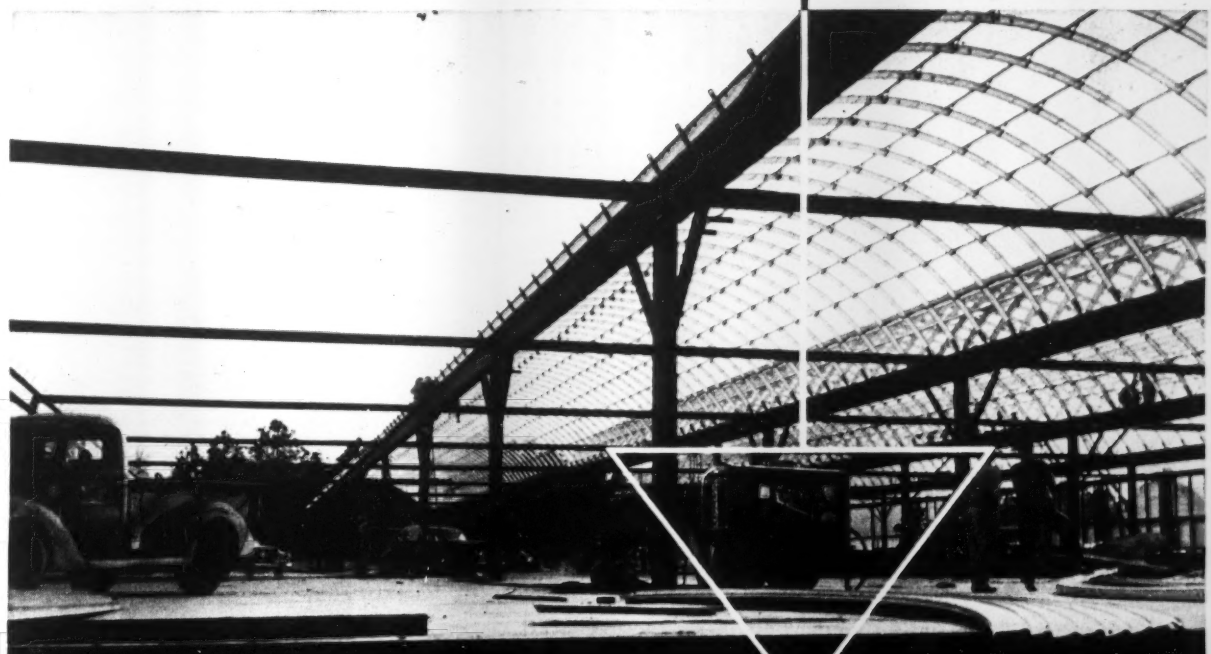

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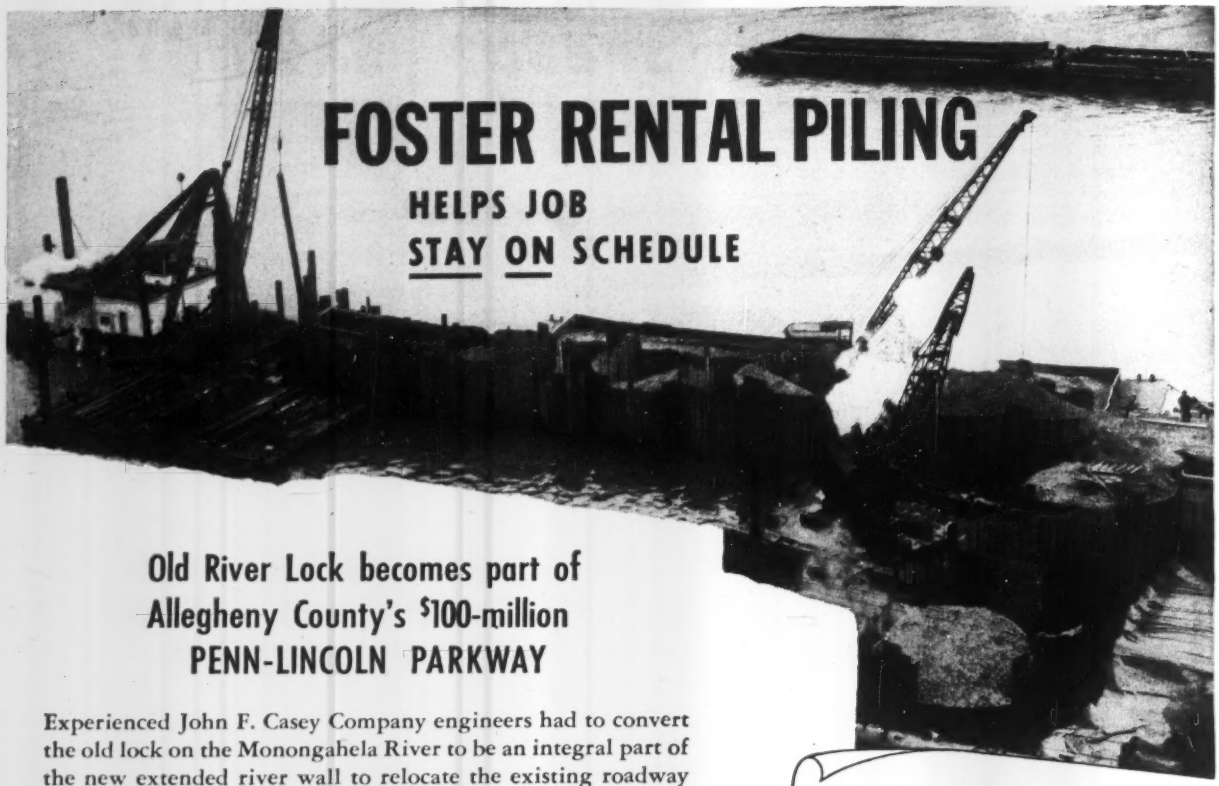

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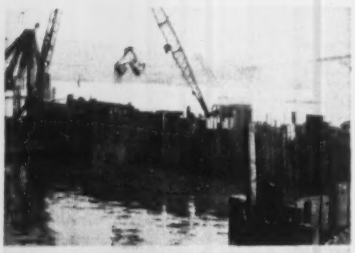

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racy were possible) could benefit an outdoor industry like construction is fairly obvious. Ben C. Gerwick, Inc., used it for 1952 operations in Eklutna, Alaska. Rainfall and temperature range were not hit on the nose, but trends predicted were said to match actual weather with "uncanny accuracy."

William H. Rempel, Cal Tech graduate now directing NWI, offers contractors what he calls a bidding forecast. This one-shot prediction tells a bidder what weather to expect for one, three or six months at a given prospective job site. The 6-month forecast will cost him $100. If he gets the job and would like to have a continuing 6-month forecast—$250 per year. For day to day operations—as opposed to over-all planning—a short-range forecast (for 7 days, issued twice weekly) can be wired to the job for $50 per month plus wire costs.

• **Caveat emptor**—Whatever the various commercial services and consulting meteorologists across the country are willing to offer in the way of long-range predictions will depend on how far they feel they have advanced skill over chance in the forecasting of weather.

Recent studies of the upper air have opened up new knowledge of jet streams and their effect on ground-level weather. The long-range forecaster is learning increasingly about these 200 to 300-mph movements of air in the troposphere. He can utilize what he knows of their effects even if he does not know their cause.

Long-range forecasting is yet in its infancy. How fast it matures—as a science—is in the hands of meteorologists. How fast it grows—as a service—is largely in the hands of the myriad of industries with a stake in the weather, construction included.

The weather:

If you do your own forecasting—here's a way to fit it to construction schedules—as DuPont did it at the Savannah River H-Bomb plant

Scheduling construction by weather forecasts

W. R. Chalker
Engineering Department
E. I. duPont de Nemours & Co.
Wilmington, Del.

Firms integrating weather predictions into their operations report benefits which well substantiate their investment in such a service. The DuPont Company is one of these.

DuPont has had staff meteorologists since 1943 advising on new plant locations and problems of air pollution as well as forecasting weather on construction jobs in recent years.

Prime example is the Savannah River H-bomb plant of the Atomic Energy Commission in South Carolina where the firm's engineering department has had a weather forecasting service since 1951. Daily forecasts—made, dispatched and posted—have guided constructors on this expansive project. And while emphasis has been on short-range forecasts, a few hours to 36 hours, longer periods have been predicted and used regularly by planners of the project.

• **What weather affects**—At the outset, the many phases of construction were studied to see what jobs were affected by weather elements. To define the weather-job relationship, studies were made to determine limits of the various weather elements within which the different jobs can be performed.

The forecaster learned some of the techniques of pouring and finishing concrete under various intensities of rainfall, including the effect on the different types of finish desired. Wind and relative humidity have a bearing on the rate of "dry out" or "set-up" of the concrete, and likewise the number of men needed in the finishing operation.

The number of hours that the temperature will be above freezing during the day may determine whether any concrete will be poured. Temperature will affect the operation of heating and cooling units. Wind will affect roofing operations and work aloft on scaffolds and power lines. Sudden drops in temperature will affect instrumentation, and if below freezing temperatures are expected for a sufficient period, practically all phases of construction are affected.

The worst offender is rain. It can halt a job momentarily or put it behind schedule for days. It can spoil materials and equipment and reduce the efficiency of labor.

Learning the weather limits within which the various jobs can be performed has been an ambitious program and one not always yielding quantitative results. However, enough information has been gained in the last year regarding this relationship to permit the forecaster to give a much better interpretation of the effect that expected weather elements will have on the different jobs than was possible initially.

• **Forecasts that fit**—It was desirable to modify the conventional type of forecast to include not only estimates of amounts of rainfall to be expected, but the beginning and ending times as well. Likewise, when freezing temperatures are a threat, in addition to predicting the lowest temperature anticipated, estimates are made of the actual number of hours that sub-freezing temperatures are expected to prevail. Personnel engaged in pouring and finishing concrete requested that predictions of relative humidity be made, and these also are included in the daily forecasts.

Success of this service is primarily derived from the maintenance of a close liaison with supervision in the field. Dissemination of the weather forecast within a large area is handled by telephone calls to key men, use of the plant two-way radio, and by the issuance of two daily printed forecasts which are dispatched and posted throughout the plant area.

• **Way it works**—To illustrate how the forecast has been of aid to supervision, consider rainfall, the element most disrupting to construction schedules. There are two basic situations in which rainfall has affected construction at this plant:

(1) Rainfall occurring throughout the work day.
  (a) Total accumulation heavy.
  (b) Total accumulation light.
(2) Rain occurring during only a portion of the work day.
  (a) Total accumulation heavy.
  (b) Total accumulation light.

In case one, the field supervisors are notified at the beginning of the work day that an "all-day" rain is anticipated and are given estimates of the total amounts of rainfall expected. If a heavy rainfall is anticipated, (½-in. or more) supervision can decide early to reschedule as much of its labor force as possible to inside jobs with a minimum of lost time.

During heavy rain, work in subgrade areas usually will not be feasible, but by rescheduling to above-grade areas, heavy equipment and a portion of labor, using foul weather gear, may continue to work all day. While concrete may be poured in rather heavy rain, the "setting up" and "finishing" of the concrete is seriously affected if it is still raining hard when this

(*Continued on page 40*)

The weather:

Some cases in point on how to work with weather forecasts on day to day construction

stage is reached. For this reason, if an all day rain is anticipated, concrete pours, especially those requiring a grade "A" finish will be cancelled and only those requiring rough finishes such as foundations and walls will be considered.

If it is advised that clearing will occur at 8-12 p.m., the pour may be started in late afternoon while it is still raining and be finished by the next shift after the rain has stopped.

In case one, where light rainfall is anticipated for the entire day, most work except in subgrade areas may be performed. Some labor may be rescheduled to inside work or above grade areas. However, certain crafts such as the electrical outside linemen cannot work even under conditions of light rain and their work must be rescheduled.

Under case two, there have been occasions when it was raining at the start of the work day, although clearing was anticipated at 10-12 a.m. Men have been kept on the job and thousands of productive man hours saved which would otherwise have been lost.

Next, the case where there is no rain at the beginning of the work day, but it is expected sometime later: As in the previous case, there will be variations in the disposition of materials and labor, depending on the time rain starts and upon the craft involved. Rain is a big factor, for example, in insulating work. Magnesium insulation for steam lines is critically affected by rainfall. On days when the morning forecast anticipates rain later in the day, the labor force is rescheduled to inside jobs, avoiding equipment spoilage and loss of time incidental to shifting materials and operations inside when the rain starts.

In another case, a large pipeline was being laid in an area of relatively low elevation. The morning forecast predicted no rain for that day, but weather trends were such that an appreciable rainfall with an accumulation estimated at from ½ to ¾ in. was anticipated to move into the area between midnight and sunrise. On the basis of this forecast, the engineer in charge put extra crews on the job to reach higher and safer elevations, thus leaving the job in a condition where it could better withstand the ensuing rain. Money was saved in pumping and cribbing costs and, of equal or greater significance, the job was not thrown behind schedule.

• Eye on temperature—Temperature forecasts are used in a variety of ways. On occasions when temperature is below freezing at the beginning of the day, the morning forecast estimates the hour when above freezing temperatures will be reached, together with the maximum temperature and the hour when below freezing temperatures again will be attained. This information was useful to supervision in postponing concrete pours because the estimated number of hours of above freezing temperatures was not enough for the "setting up" and "finishing" stages.

Twice within one month the weather office notified grouting crews on a pipeline job of impending freezing temperatures where the period of subfreezing temperatures would exceed four hours. No joints were grouted beyond points which could not be backfilled before quitting time. Result of this advance weather information: no joints were frozen.

• It's not just the heat—Temperature forecasts used in conjunction with humidity forecasts are useful to personnel engaged in pouring and finishing concrete. On hot, dry days, dry-out and set-up of concrete occur rapidly. On such days if insufficient men are scheduled, the concrete may "set" before finishing operations are completed.

Wind forecasts are issued routinely and include both the average wind and the maximum gusts expected. At this plant, where safety practices form such an integral part of every operation, wind forecasts are followed closely by personnel engaged in roofing, scaffolding and high power line work.

Among miscellaneous uses made of weather predictions are: protection of foods sent to field personnel; scheduling of official photographic work; the planning and scheduling sections have made extensive use of the extended forecast. In the first winter of construction (1951-52) there were several buildings without heat. A problem facing supervision was whether to rush the duct work for the boiler units by going to extra shifts and additional workmen. From weather trends, no appreciable periods in which temperatures would reach the range 40-45° were foreseen, and it was decided to maintain a regular work schedule. Excavations for buildings or other facilities can be rescheduled if an appreciable rainy situation is foreseen. Safety-wise such information is valuable in reducing cave-in accidents.

The considerable climatological data gathered for this area have influenced locations for burning pits; heating and cooling loads and cooling tower performance; paint spraying operations out of doors.

While size of a construction job is a major consideration, the foregoing examples illustrate benefits which may be realized from weather forecasting. These benefits include production time savings which insure an earlier start-up, job safety, improved planning and other intangibles, virtually impossible to evaluate.

In the final analysis, it is the construction engineer who has acquired an additional tool to aid him in reaching decisions on the more efficient disposition of materials, equipment and labor.

ENR introduces new 20-cities

The fact that weather is worth talking about to its readers led ENR to publish the foregoing staff report and the article following it on actual job applications of weather intelligence.

To go even further, the theory that information on next week's or next season's weather—even though it be only an educated guess based on statistical probability—can be useful to its readers leads ENR to launch here precipitation and temperature probabilities which will become a continuing service.

This is not a long-range forecast. What are presented here for the first time are tables of observed normals, based on long recorded weather histories, in each of the 20 U. S. cities for which ENR reports price and wage information each month.

Normal precipitation range for the six succeeding months and normal temperature range are presented as obtained from the U. S. Weather Bureau for the 20 cities.

Once a month ENR will publish these tables. Each time, the observed normal data, as received from the U. S. Weather Bureau, will be extended one month so that the future six months always will be covered. And each time, for a check, the preceding month's actual weather data, collected from ENR reporters in the 20 cities, will be presented.

Intervening issues of ENR, while not carrying the monthly tabulations will publish the descriptive weather outlook presented by the USWB in its bi-monthly 30-day outlooks. The first of these follows:

weather service

The 30-day outlook for July calls for temperatures to average above seasonal normals over central and western portions of the nation except for slightly cooler than normal along the West Coast. Greatest departures on the warm side of normal are expected over the Southwest and Central Plains. Temperatures are expected to average near normal in the Northeast and slightly cooler than normal in the Southeast sections of the country.

Substantial drought-relieving rains are expected from central Texas eastward to the Appalachians, but dry conditions are expected to persist from the Southwest into the Central Plains. Near normal precipitation is predicted in the northern tier of states, the Ohio Valley, and the Middle and South Atlantic States.

OBSERVED PRECIPITATION AND TEMPERATURE IN 20 CITIES, COMPARED WITH NORMALS

City	Precipitation, inches: June 1953	Departure fr. normal	6 mos. 1953	Departure fr. normal	Temperature, degrees F.: Mean June '53	Departure fr. normal	Av. daily Maximum	Av. daily Minimum
Atlanta	2.09	−1.93	29.24	...	78.2	+0.5	87.9	68.4
Baltimore	6.49	+2.97	30.90	+8.56	73.9	+0.4	82.7	65.1
Birmingham	1.22	−2.99	28.60	−0.46	81.4	+4.0	92.5	70.2
Boston	0.48	−3.00	33.00	+13.29	70.5	+3.3	80.5	60.5
Chicago	4.63	+0.48	16.85	+0.12	73.6	+4.2	84.5	62.6
Cincinnati	1.16	−2.89	17.59	−3.70	76.0	+3.2	86.8	65.2
Cleveland	3.30	+0.25	29.35	−2.73	71.5	+2.1	83.3	59.6
Dallas	0.83	−2.62	14.58	−5.60	87.6	+5.7	98.6	76.5
Denver	1.63	+0.18	6.23	−1.48	71.1	+3.8	...	...
Detroit	3.09	+0.19	13.37	−0.97	70.9	+2.8	81.2	60.6
Kansas City	1.48	−3.54	13.52	−4.93	82.6	+7.2	93.5	71.6
Los Angeles	0.06	−0.01	9.46	−5.08	66.8	−1.0	76.2	57.4
Minneapolis	7.16	+2.84	14.35	+1.66	70.9	+2.7	81.0	60.9
New Orleans†	1.28	−4.15	44.98	−3.42	...	...	...	...
New York	1.42	−2.28	27.04	+6.46	71.6	+1.8	80.3	62.9
Philadelphia	4.58	+0.61	33.18	+12.46	73.2	+0.6	82.1	64.2
Pittsburgh	2.36	−1.47	18.73	−0.07	73.6	+1.6	81.5	61.8
St. Louis	2.12	−1.68	16.66	−3.09	82.4	+6.8	92.8	72.0
San Francisco	0.61	+0.46	9.54	−3.41	57.8	−1.3	64.3	51.3
Seattle	1.44	+0.19	21.12	+5.13	58.5	−3.2	65.2	51.8

†Data is for May '53 and first five months '53

PRECIPITATION RANGE IN 20 CITIES, IN INCHES

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.
Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	October	Mid. Oct.-Mid. Nov.	Nov.	Mid. Nov.-Mid. Dec.	Dec.	Mid. Dec.-Mid. Jan.	Jan.	Mid. Jan.-Mid. Feb.
Atlanta	2.99/4.80	2.89/4.90	2.79/5.00	2.24/4.30	1.69/3.60	1.64/3.25	1.59/2.90	2.01/3.38	2.43/3.85	2.94/4.58	3.46/5.30	3.42/5.32	3.39/5.33	3.38/5.50
Baltimore	2.61/4.98	2.91/5.32	3.20/5.66	2.65/4.51	2.10/3.36	1.88/3.57	1.66/3.77	1.61/3.45	1.56/3.12	1.99/3.43	2.41/3.73	2.59/3.85	2.77/3.96	2.57/3.68
Birmingham	3.94/5.53	3.44/5.39	2.92/5.25	2.32/4.47	1.71/3.69	1.62/3.14	1.52/2.58	1.84/3.24	2.17/3.91	2.94/4.83	3.71/5.75	3.75/5.58	3.75/5.40	3.61/5.64
Boston	2.61/4.02	2.60/4.36	2.59/4.70	2.32/4.20	2.04/3.70	2.26/3.88	2.49/4.07	2.62/4.26	2.74/4.46	2.82/4.33	2.89/4.20	2.83/4.12	2.77/4.05	2.70/3.99
Chicago	2.49/3.65	2.31/3.65	2.13/3.65	2.11/3.70	2.09/3.75	1.84/3.42	1.59/3.10	1.59/2.95	1.59/2.80	1.46/2.62	1.32/2.45	1.30/2.28	1.29/2.10	1.40/2.16
Cincinnati	2.39/3.70	2.32/3.95	2.24/4.30	2.02/3.64	1.79/3.08	1.64/2.99A	1.49/2.90	1.74/3.28	1.99/3.67	2.14/3.48	2.29/3.28	2.32/3.54	2.34/3.80	2.07/3.40
Cleveland	2.47/4.08	2.15/3.84	1.83/3.60	2.07/3.51	2.30/3.41	2.03/3.29	1.75/3.16	1.79/2.97	1.82/2.77	1.76/2.66	1.70/2.56	1.65/2.58	1.59/2.60	1.55/2.52
Dallas	1.39/3.00	1.30/2.89	1.22/2.78	1.50/2.94	1.77/3.10	1.66/3.30	1.55/3.50	1.60/3.25	1.64/3.00	1.36/3.00	1.09/3.00	1.24/3.05	1.39/3.10	1.49/2.70
Denver	1.21/2.00	1.04/1.86	0.87/1.73	0.60/1.39	0.52/1.05	0.57/1.08	0.62/1.10	0.46/0.89	0.29/0.68	0.34/0.72	0.39/0.77	0.28/0.64	0.18/0.50	0.26/0.54
Detroit	2.09/3.70	1.94/3.54	1.79/3.38	1.80/3.41	1.82/3.44	1.72/3.02	1.63/2.60	1.70/2.66	1.77/2.73	1.70/2.66	1.64/2.60	1.63/2.50	1.62/2.40	1.56/2.45
Kansas City	2.77/4.69	2.74/4.84	2.70/5.00	2.84/5.00	2.99/5.00	2.34/4.54	1.69/4.07	1.48/3.21	1.27/3.25	1.02/1.95	0.77/1.55	0.68/1.48	0.59/1.42	0.80/1.66
Los Angeles	0.00 T	0.00 T	0.00 T	0.00/0.02	0.00/0.03	0.08/0.32	0.15/0.60	0.20/0.95	0.26/1.30	0.70/2.00	1.14/2.70	1.19/3.00	1.24/3.30	1.12/3.25
Minneapolis	2.14/4.00	2.16/3.85	2.19/3.70	2.24/3.78	2.29/3.85	1.79/3.15	1.29/2.45	0.98/2.01	0.67/1.57	0.62/1.44	0.57/1.30	0.60/1.19	0.64/1.08	0.58/1.08
New Orleans	5.37/7.40	4.90/7.08	4.44/6.75	3.78/6.12	3.11/5.50	2.55/4.81	1.99/4.12	2.34/4.40	2.69/4.67	2.96/4.92	3.24/5.17	3.36/5.28	3.49/5.40	3.14/5.05
New York	3.26/4.70	2.99/4.95	2.72/5.20	2.46/4.30	2.21/3.40	2.15/3.76	2.09/4.13	2.15/4.04	2.21/3.95	2.42/3.86	2.64/3.77	2.55/3.71	2.46/3.65	2.41/3.88
Philadelphia	3.19/4.37	2.99/4.91	2.79/5.45	2.44/4.62	2.09/3.90	2.04/3.85	1.99/3.80	2.18/3.65	2.36/3.50	2.50/3.70	2.64/3.90	2.60/3.80	2.57/3.70	2.57/3.69
Pittsburgh	2.72/4.50	2.52/4.15	2.32/3.80	2.20/3.30	1.87/2.80	1.98/3.00	2.09/3.20	1.96/2.96	1.84/2.92	1.96/3.00	2.09/3.27	2.21/3.20	2.14/3.13	1.96/2.98
St. Louis	2.41/4.25	2.28/4.18	2.14/4.11	2.12/3.84	2.09/3.58	1.89/3.42	1.69/3.25	1.78/3.28	1.86/3.30	1.70/3.05	1.64/2.80	1.52/2.75	1.39/2.70	1.48/2.80
San Francisco	0.00/0.01	0.00 T	0.00 T	0.00/0.13	0.00/0.26	0.10/0.73	0.19/3.20	1.12/2.25	1.04/3.30	1.62/4.28	2.19/5.25	2.34/5.12	2.49/5.00	2.24/4.86
Seattle	0.19/0.67	0.18/0.78	0.18/0.90	0.62/1.55	1.07/2.20	1.70/2.85	2.32/3.50	3.07/4.55	3.82/5.60	4.00/5.74	4.17/5.89	4.14/5.57	4.12/5.25	3.34/4.92

A—Lexington, Ky. T Traces (Less than 0.005 inches)

MEAN TEMPERATURE RANGE FOR 20 CITIES, IN DEGREES F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.
Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	October	Mid. Oct.-Mid. Nov.	Nov.	Mid. Nov.-Mid. Dec.	Dec.	Mid. Dec.-Mid. Jan.	Jan.	Mid. Jan.-Mid. Feb.
Atlanta	79.0/79.9	78.9/79.9	78.0/79.1	76.3/78.1	72.9/75.4	68.2/70.2	62.3/63.8	56.6/58.2	76.9/78.5	46.6/48.4	44.0/46.0	43.3/45.3	43.5/45.5	44.0/46.4
Baltimore	76.2/77.5	75.5/77.3	73.6/75.7	71.1/73.3	67.1/69.4	62.2/64.4	56.4/58.3	50.9/52.6	45.6/47.0	40.2/42.0	35.8/37.8	32.2/36.1	33.9/35.7	33.4/36.0
Birmingham	78.9/80.0	79.0/80.3	78.5/79.8	76.6/78.5	73.3/75.6	68.5/70.7	62.2/64.2	56.2/58.5	50.7/53.2	46.5/48.9	44.3/46.5	43.4/46.1	43.5/46.5	44.4/47.6
Boston	71.7/73.0	72.1/73.4	70.9/72.1	67.6/69.2	63.3/65.4	58.9/61.0	54.2/56.2	49.3/51.3	43.6/45.6	36.8/39.2	31.2/34.0	28.9/31.9	27.9/31.2	26.4/29.6
Chicago	73.7/75.1	73.8/75.4	72.0/73.7	68.8/70.7	64.5/66.7	59.3/61.7	52.8/55.3	45.9/48.6	38.6/41.5	31.2/35.0	25.7/30.3	23.7/28.5	23.2/28.1	23.1/28.1
Cincinnati	74.1/75.8	73.9/75.7	72.5/74.4	70.2/72.1	66.5/68.4	61.2/63.3	54.9/57.1	38.6/50.9	42.0/44.5	35.9/39.1	31.4/35.2	30.1/34.4	29.8/34.6	29.9/34.4
Cleveland	72.7/74.2	72.5/74.2	70.9/72.7	68.5/70.6	64.7/67.1	59.5/61.9	53.5/55.6	47.1/49.3	40.5/42.7	34.3/37.2	29.3/32.9	27.3/30.9	26.9/30.5	26.0/29.6
Dallas	84.5/86.4	85.6/87.3	85.1/86.7	82.3/83.9	78.1/79.7	73.8/75.1	68.5/69.4	61.4/63.1	54.3/56.7	49.9/52.3	47.0/49.3	44.8/47.1	44.1/47.5	45.8/49.2
Denver	72.1/73.7	72.5/74.0	70.8/72.2	67.3/68.6	62.2/63.4	56.7/58.3	50.8/52.8	44.5/47.2	38.0/41.4	33.5/36.7	30.5/33.5	28.3/31.4	27.0/30.0	27.9/31.5
Detroit	72.5/73.5	72.3/73.6	70.5/72.0	67.5/69.5	63.0/65.6	57.8/60.2	51.9/54.1	45.8/47.9	39.2/42.1	32.9/35.3	27.9/30.9	25.6/28.5	24.8/27.7	24.2/27.8
Kansas City	80.0/81.5	80.2/81.8	78.4/80.1	74.6/76.6	69.7/71.9	64.4/67.0	58.1/61.2	50.7/53.9	42.6/45.9	36.7/40.1	32.4/35.9	30.4/33.0	30.0/31.9	30.2/33.6
Los Angeles	66.9/68.4	67.5/68.9	67.4/68.6	66.8/68.1	65.9/67.3	64.4/65.9	62.7/64.2	60.5/62.1	57.9/59.8	56.5/58.2	54.9/56.5	53.4/54.8	52.7/54.0	52.6/54.3
Minneapolis	72.9/74.9	73.2/75.0	70.8/72.3	66.3/68.4	61.0/63.6	55.5/58.3	48.8/51.7	40.6/44.5	30.9/36.0	22.5/28.1	16.2/22.3	13.8/18.4	13.4/16.5	13.3/17.7
New Orleans	81.4/82.3	81.8/82.7	81.8/82.7	80.8/81.9	78.5/79.7	75.1/76.5	70.5/71.9	64.6/66.8	59.0/61.9	56.0/58.5	54.6/56.8	53.2/56.0	52.6/56.0	54.0/54.4
New York	75.2/76.3	75.1/76.3	73.6/74.9	70.0/72.5	67.4/69.0	62.7/64.3	57.0/58.6	51.8/53.2	46.5/47.9	40.2/42.3	34.6/37.5	32.5/35.2	32.0/34.6	30.9/33.6
Philadelphia	75.5/76.6	75.1/76.3	73.3/74.5	70.6/72.1	66.8/68.5	61.6/63.5	55.6/57.6	50.3/52.3	45.3/47.2	39.5/42.0	35.1/37.3	32.7/35.4	31.8/35.0	31.1/34.3
Pittsburgh	71.4/72.8	71.0/72.4	69.3/70.9	67.2/68.9	64.0/65.9	58.8/60.9	52.0/54.4	46.2/48.2	40.3/42.0	34.0/36.4	29.5/32.6	27.8/31.0	26.9/30.1	26.4/30.5
St. Louis	78.7/80.2	78.5/80.1	76.7/78.5	73.6/75.6	69.1/71.2	64.0/66.3	58.1/60.5	51.0/53.9	43.6/46.9	37.6/41.2	33.3/37.1	30.9/35.1	30.1/34.7	31.3/35.7
San Francisco	59.7/60.9	59.5/60.7	60.1/61.2	60.9/62.2	61.3/62.8	60.4/62.0	58.5/60.2	56.4/57.9	53.8/55.0	50.9/52.3	48.7/50.2	47.1/48.9	46.9/49.1	48.3/50.8
Seattle	63.6/64.6	64.1/65.0	62.7/64.1	60.8/62.0	58.0/59.0	54.8/56.1	51.0/52.5	46.8/48.3	43.1/44.5	41.0/42.4	39.4/40.7	37.7/39.0	37.2/38.5	38.2/40.0

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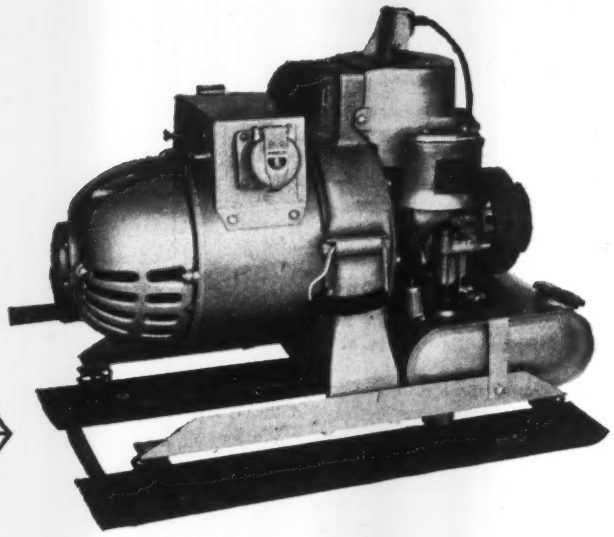

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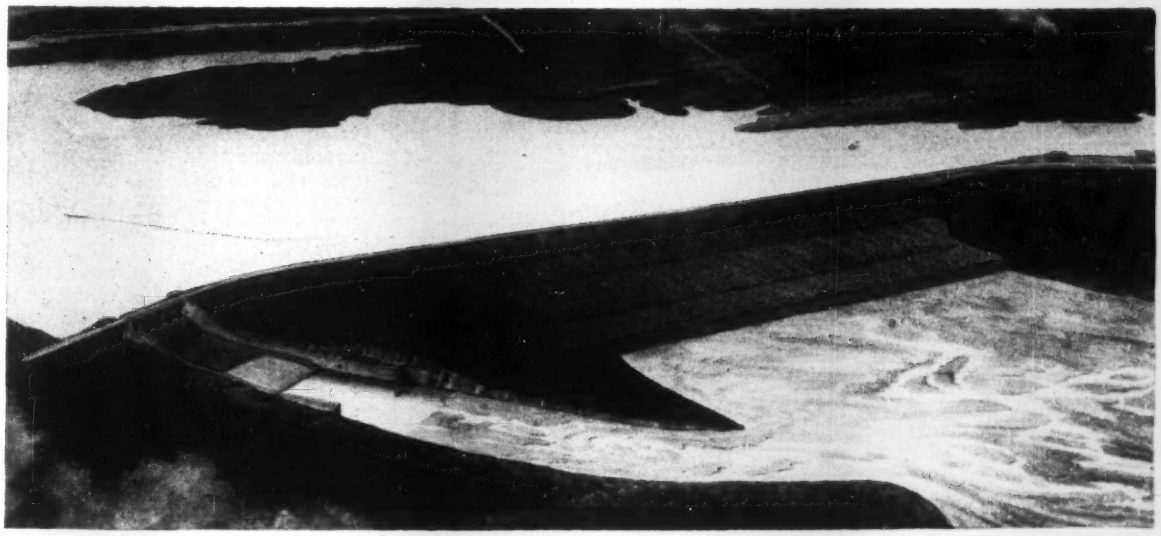


Sanford Dam, on the Canadian River, may be built with private funds to provide a . . .

New lifeline for 12 thirsty Texas cities

Texas is rich in oil and other natural resources. But farsighted civic and industrial leaders in the western part of the state are becoming increasingly convinced that water is actually more valuable than all the fabulous oil, sulphur and mineral resources combined.

There are few areas in Texas where this is more apparent than in the Panhandle-High Plains region in the northwestern corner of the state. Twelve cities in that area (see map) have banded together to develop an increased and dependable supply of domestic and industrial water.

The 12 cities—with a combined population of nearly 300,000—are solely dependent on well water from slowly diminishing underground sources. Their only available source of surface water is the erratic Canadian River which flows northeasterly across the upper tip of the Panhandle. This source must be tapped to meet the rapidly expanding water needs of the area.

Some of the cities in the southern end of the project are facing immediate groundwater shortages for bare municipal needs. They must seek new water sources at once.

• **Rapid depletion**—Pumping rates to meet the requirements of the larger cities—Lubbock, Amarillo, Pampa and in the Borger area—are so large that local dewatering of water sands is several times the rate at which the water supply is replenished. In some small local areas this rate of depletion is 20 times that of replenishment.

Expansion of well fields to new areas is costly. The results are uncertain and they do not provide a permanent, reliable water supply. This uncertainty and the lack of a surface water supply discourages and retards industrial expansion in these new areas.

In addition, a number of cities now pump groundwater from the common aquifer in competition with over 18,000 irrigation wells that supply 2,465,000 acres in the Panhandle-Plains region. These wells pump water at the rate of 2,500,000 acre-ft annually, according to the Canadian River Project Water Users' Association. The result is a constantly declining water table, steadily rising pumping costs, and uncertainty over what the ultimate supply will be.

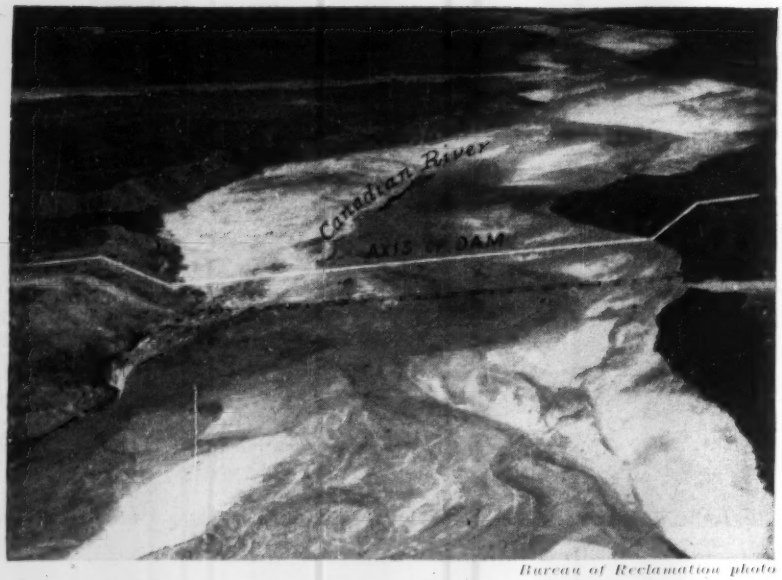
Expanding municipal and industrial needs are also forcing the cities to buy and retire irrigated land at a rapid rate, regardless of the fact that irrigation is the chief factor in a stabilized economy for that part of Texas. Also, the cities face the constant possibility of litigation in areas where their concentrated pumping produces water table declines adverse to nearby interests.

The over-all plan considers the construction of Sanford Dam on the Canadian River about 45 miles northeast of Amarillo, 17 pumping stations and 365 miles of conduit. Although authorized by Congress two years ago for construction by the Bureau of Reclamation, this multi-million dollar project may be financed by private funds as a result of a recent turn of events.

• **Create water authority**—Last March, the Texas State Board of Water Engineers, at the request of local interests, approved the creation of a water district to serve 12 cities sponsoring the project. This was followed by introduction of a bill in the state legislature creating the Canadian River Municipal

SANFORD DAM—FACTS AND FIGURES

Type	Rolled earth-fill
Crest length	7,200 ft
Maximum height	186 ft
Top width	40 ft
Reserve capacity (acre-ft):	
Sedimentation	440,000
Conservation	440,000
Flood control	425,000
Superstorage (uncontrolled)	651,000
Total	1,956,000
Spillway capacity	133,000 cfs



Bureau of Reclamation photo

CANADIAN RIVER—A sandy bottomed, sluggish stream at low water—runs bank full in flood stage, wasting its precious water into the Arkansas River and finally into the Gulf of Mexico. Pipeline crossing (foreground) is one of five that will require relocating.

Water Authority, and adding powers not granted under general laws.

Despite some opposition from downstate, the bill was passed by the legislature, and became law on May 27.

The new bill provides for ". . . representation on the board of directors for each city in the project . . . exclusion of the acquisition or development of underground water in connection with the development or operation of the project . . . and equal water rates for all project cities, regardless of their distance from the proposed reservoir."

Elections will be held soon in the cities affected to ratify the creation of the authority, and there is little doubt that each community will vote to remain in the project.

After the water district has been organized it will have full authority to negotiate for construction of Sanford Dam, pumping stations and aqueduct to transport water to the project cities. But more important, its directors will be empowered to contract either with the federal government or with private concerns to finance and build the project. Any such construction contract, however, must then be ratified by an election in each of the 12 cities.

• Bond firms interested—Private financing of the project, which is estimated to cost about $85 million, is within the realm of possibility. During recent months representatives of several investment firms have expressed their desire to submit proposals to finance construction of the project by the purchase of bonds. In fact, two of the firms are conducting engineering surveys to determine their ability to handle the financing.

This increased interest on the part of bond buyers indicates there is a good possibility that the project may be financed by the sale of bonds. One serious question, however, is whether or not private financing can be arranged for full development of the project's potential water resources, with repayment of the bonds over a 30 to 50-year period. The project cities are confident that this can and will be done.

The bonds would be retired from the sale of the treated Canadian River water delivered at the portals of the cities. Current estimates place this cost at 14-c to 16-c per 1,000 gallons.

TENTATIVE ALLOCATIONS OF WATER

City	Acre-ft per year
Amarillo	32,540
Lubbock	32,540
Borger:	
Industrial	30,000
Municipal	5,600
Plainview	6,790
Pampa	4,320
Lamesa	3,740
Brownfield	2,720
Levelland	2,580
Littlefield	1,740
Slaton	1,700
Tahoka	960
O'Donnell	370
Total	125,600

In the final analysis, the water district will finance its Canadian River project by private funds, or through the Bureau of Reclamation, whichever offers the most feasible plan. In determining feasibility, local ownership and management, expeditious handling, and other factors undoubtedly will be considered.

The Bureau of Reclamation would have no objection to its being financed with private funds should the people so decide. Since the project was authorized by Congress, however, the Bureau of Reclamation is proceeding with project design plans, based on its geological and hydrological surveys.

• Not a new project—The Canadian River project is not a newly conceived plan, but its necessity has been accentuated by a continuing drouth in the Panhandle. Attempts to conserve and utilize Canadian River water date back to before World War I. The present plan, however, did not begin to gather strong support until the spring of 1948. By that time, residents of Amarillo, Lubbock and other cities in that area were becoming concerned about a sufficient water supply to sustain continuing growth.

Early in 1949, the Bureau of Reclamation started benefit-cost studies on the project, completing them in June of that year. This plan, including the construction of the dam, pumping stations and aqueduct was estimated to cost $85 million—93% of which plus interest would be repaid to the government over a 50-year period by the participating cities.

Congress authorized construction of the project by the Bureau of Reclamation in the latter part of 1950. But this merely paved the way for further action. Construction couldn't be started until Congress ratified a compact among New Mexico, Texas and Oklahoma concerning the division of the waters of the basin.

This compact was ratified on May 1, 1951. Under its terms a yearly maximum of 125,000 to 150,000 acre-ft of Canadian River water will be made available to the project cities. At this point two other steps were necessary before construction could be started: Congressional appropriation of construction funds, and the creation of a legal entity to represent the cities in negotiating repayment contracts with the government.

In March of last year an economic survey of the area was completed by the University of Texas, Bureau of Business Research. It showed that even if the area gets 125,000 acre-ft

(*continued on page 47*)

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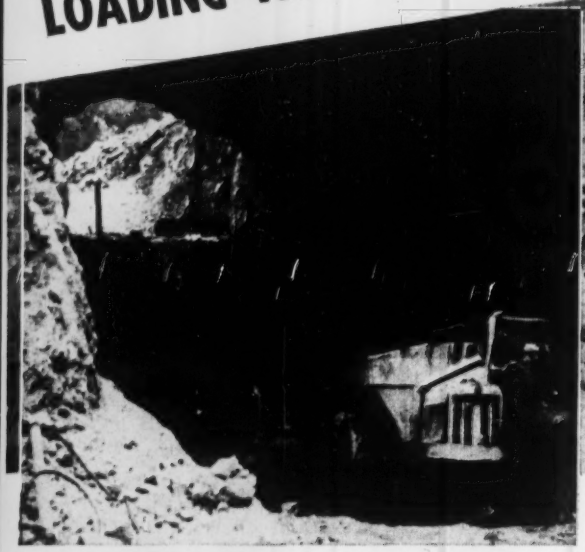

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CANADIAN RIVER VERSUS AMARILLO AND LUBBOCK WELL WATER

(Except for specific conductance and pH factor, all analyses are in parts per million)

	Canadian River	Amarillo	Lubbock
Specific Conductance	1,070	559	1,521
pH	8.0	7.9	7.9
Silica	18	65	62
Iron	0.0	0.1	0.0
Calcium	48	44	87
Magnesium	21	35	72
Sodium & Potassium	139	30	138
Bicarbonate	193	312	301
Sulfate	187	36	311
Chloride	105	7	165
Fluoride	0.7	3.0	2.4
Nitrate	3	3.4	9.1
Dissolved solids	624	366	1,047
Total Hardness	204	252	655

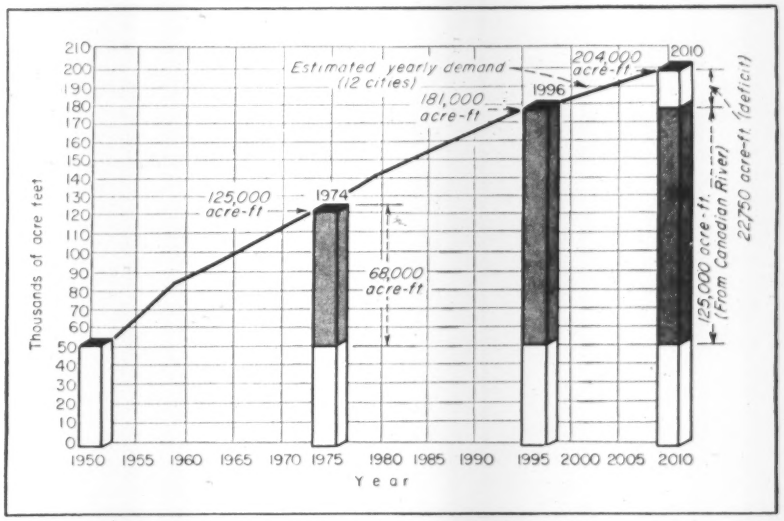
of Canadian River per year, demand will exceed supply in 44 years. At that time, the cities would have to find additional water supply.

The amounts of water each city will receive from the completed project have been established tentatively (see table). Final allocations, however, to insure equitable distribution will be determined by the authority's board of directors, in conference with the cities' officials. The 125,000 acre-ft per year probably will be allocated on a population basis, considering present and past water consumption.

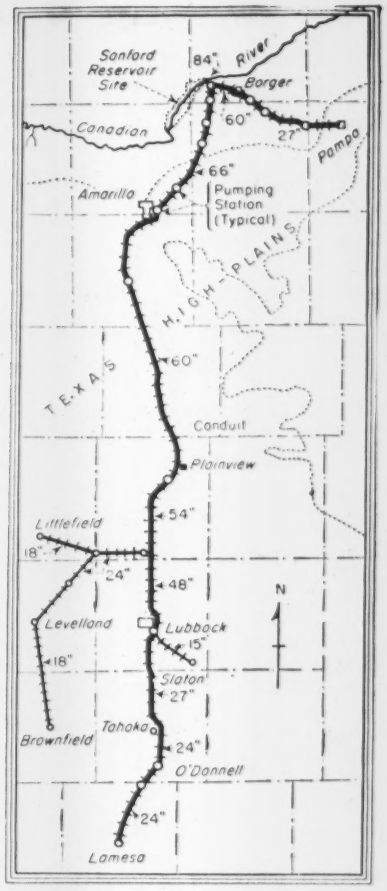
• **No direct irrigation**—Present plans do not envisage any direct irrigation water from the project supply of 125,000 acre-ft. Irrigation systems at Amarillo and Lubbock and possibly at other project cities, however, would recover sewage effluent for use upon nearby lands.

While the project is designed directly for industrial and municipal water supply, it will aid irrigation in that area indirectly by relieving the demands placed upon depleting ground waters which now supply all water needs, including irrigation.

One acre-foot of water will irrigate an acre of land for most crops in the area. On this basis, 125,000-acre-ft of water from the Canadian River per year would mean the conservation of underground water needed for irrigating 125,000 acres of land. On the assumption that an acre of irrigated land can produce food and fiber to support two persons, the area could support an additional 250,000 people.



ESTIMATED ANNUAL DEMAND (bars in chart) indicates that even with an additional 125,000 acre-ft of Canadian River water per year, total demand from expected population growth and industrial expansion in the 12 cities will exceed the supply in less than 50 years.



LIFELINE includes 17 pumping stations and 365 miles of conduit, 84-in. to 24-in. dia. which will furnish 12 cities with water from Sanford Reservoir.

• **Quality of water**—Canadian River water will be acceptable for municipal consumption (see table), superior in some respects and inferior in others to the ground water being used by the project cities.

Its fluoride content will be low enough so that "tooth stain," now widespread, will be eliminated.

• **Public reaction**—Although proponents of the Canadian River project expect to encounter some minor objections—as would be expected of any project of its type and size—the majority of residents of the project cities are believed to favor it, according to W. B. Holmes, city engineer of Lubbock.

"We believe that between 70% and 90% of our qualified voters in Lubbock (population 105,000) are wholeheartedly in favor of the project," says Holmes.

Outlying property owners too, are becoming increasingly aware of the value of underground water. They have increased the price of water rights on

land on which water wells for the cities may be drilled to such an extent that the cost is almost prohibitive. Farmers in the vicinity of Lubbock are asking up to $1,000 per acre for water rights under land that normally sells for $500 to $600 per acre.

Lubbock's share of the Canadian River water will be about 30 mgd, but this full demand probably will not be reached for another 15 to 18 years. The city now operates 83 wells which were pumped last year at a maximum rate of 28 mg per day. The city also owns water rights on 47,000 acres in Bailey County—two counties away. This reserve will be used only after demand exceeds both the present well water and Canadian water supplies—probably 25 to 30 years from now.

• **Amarillo's problems**—Amarillo, with its population of about 100,000, has just completed a four-year, $2 million water expansion program. "If our present rate of growth continues," says H. R. Smith, Director of Public Works, "demand will exceed our supply of subsurface water in two years. Any additional expansion will be costly since we have nearly reached the hydraulic capacity of the three inflow lines from our 64 wells."

Amarillo's wells range from 100 to 335 ft in depth, and are located from 5 to 25 miles from the city. Maximum daily consumption is 36.8 mg; but, the quality of the well water is so good that the only treatment used is the addition of chlorine at the rate of 0.2 ppm.

• **Smaller cities**—Levelland (population 10,250) reports its present water supply is adequate, but its needs are increasing so rapidly that demand will exceed supply in the near future. The city operates 6 wells with a maximum pumpage of 2.5 mgd. It hopes to augment this supply with 2 mgd of Canadian River water.

Tahoka (pop. 2,830) has 11 wells that furnish a daily average of 500,000 gal. The community will need more water in the next 12 to 18 months.

Brownfield's water supply is adequate now, but the city will need Canadian River water as it continues to grow since nearby water fields are at a premium and are generally unavailable for municipal purposes. Its 8,500 residents are served by 11 wells, which pumped a maximum of 2.5 mgd last year.

Pampa's underground water sources are believed to be sufficient for only the next three or four years. "After that," says Ray Evans, Director of Public Works, "a new underground water field will have to be found, tested and developed. We know any such fields, if found at all, will be at a great distance from the city."

Nine wells now serve Pampa, which has a population of 20,020. Last year the maximum daily pumpage was 5.6 mg. Moreover, industries within 10 miles of the city limits are consuming 12 mgd of water from their own wells. These include chemical, gasoline and carbon black plants.

Lamesa (pop. 10,700) has just completed two wells, making a total of 23, and increasing its municipal water supply by 900,000 gal per day. Maximum daily pumpage last year was 3 mg.

"Our water supply is adequate at present," says C. A. Taylor, city manager, "and we do not anticipate having to increase it for at least three years. While we do not expect the completion of the Canadian River project to cause any rapid increase in the present rate of growth of our population, if the project is not built we expect a sharp decline in both residential and industrial construction." Lamesa hopes to receive 2 mg of water per day from the project by 1960.

• **Construction schedule**—It will take about four years to build the dam, and about five years to construct the 365 miles of pipe line, and the 17 pumping stations.

As shown on the location map, initial diameter of the conduit will be 84 in., decreasing in size to 24 in. at Lamesa. Part of the line will be under pressure and part will be gravity flow. The static lift from the dam to Amarillo is 650 ft. Lubbock's elevation is 474 ft lower than that of Amarillo.

A. A. Meredith is executive secretary of the Canadian River Project Water Users Association—the organization which is composed of representatives of the project cities fostering the construction of the project.

Arch tie prestressed to hold length

A. F. Campbell
Patchen & Zimmerman, Engineers
Augusta, Ga.

To obtain clearances specified for a maintenance hangar at an Air Force base, Patchen & Zimmerman found the trussed three-hinged arch to be the economical structure.

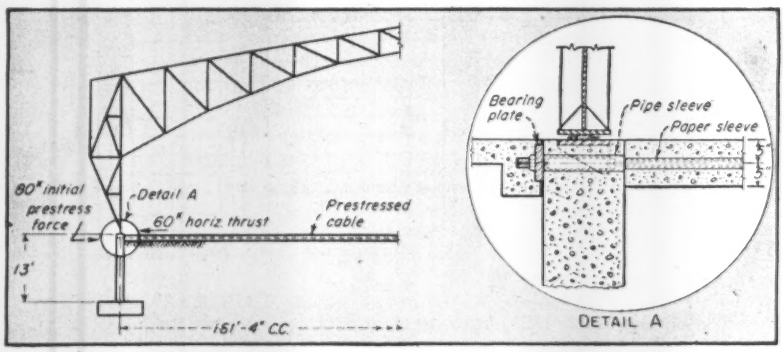
However, a satisfactory manner of counteracting arch thrust had to be devised.

The earth did not permit abutment foundations so the arch had to be tied. Structural steel tie bars were eliminated when calculations showed an elongation of ¾ in. in a bar of proper size to take the 60-kip horizontal thrust that would occur at each column.

Prestressing was the solution. The design called for the use of high strength, cold drawn steel wire with a maximum elongation of 0.7% at 190,000 psi and an ultimate strength of 240,000 psi. End connections to develop the strength of the cable at 0.7% elongation without slip were specified but the selection of type was left to the contractor with approval by the contracting officer.

The only deviation from the normal construction procedure was to place the concrete slab before erecting the structural steel. A pipe sleeve cast in the concrete pedestal allowed the prestressing cables to be placed in final position after the column footings and pedestals were completed and before the main hangar slab was placed. To prevent bond between the tie rod and the concrete, a coating of petroleum grease and paper-tube encasement for the cable was specified.

A prestressing load of 80,000 pounds was induced in each tie rod by means of a hydraulic jack. The end connection was concreted in to prevent slip. Steel erection then proceeded.

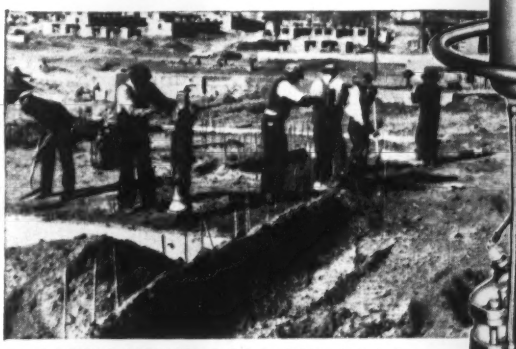


MINIMUM HINGE MOVEMENT horizontally is obtained by prestressing the tie cable. Slab, built before arch erection, holds prestress.

FOR SOIL COMPACTION IN RESTRICTED AREAS!

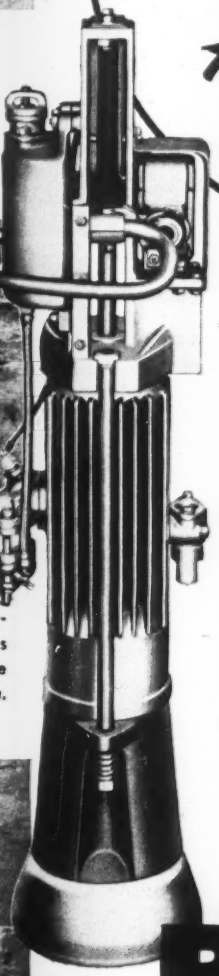
BARCO *is the Answer!*

CALIFORNIA HOSPITAL—Ability to work inside buildings and in other restricted areas makes the Barco Rammer invaluable. The job pictured above is on the Peninsula Hospital near Millbrae, California. *Contractors:* Williams & Burrows and Carl N. Swenson Company. (*Photo:* CONSTRUCTION ILLUSTRATED.)



GEORGIA HOUSING PROJECT—With Barco Rammers, you can finish fill to high degree compaction immediately for quicker completions and important savings in cost. This is why the J. A. Jones Construction Co. used seven Barco Rammers on the Lakewood Housing Project at Atlanta, Georgia. (*Photo:* DIXIE CONTRACTOR.)

NEW YORK DAM—Exacting specifications for soil compaction on the Downesville Dam project of the New York City Board of Water Supply were easily met by Barco Rammers used by Carlo Bianchi & Company. (*Photo:* CONSTRUCTIONEER.)



SOIL COMPACTION is the key to *better construction* on important building projects throughout the country—and on these jobs, BARCO IS THE ANSWER! Time after time, it has been proven that no other type of equipment can match BARCO PERFORMANCE.

The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. On area tamping, where specifications call for 95% to 97.5% (modified Proctor) compaction, one man can average 20 to 30 cubic yards of fill per hour, day after day.

If you are not already using the Barco Rammer for soil compaction work, find out about it now! *Worldwide Sales and Service.* BARCO MANUFACTURING COMPANY, 514H Hough St., Barrington, Illinois. (*Near Chicago*).

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"Pegson" Gasoline
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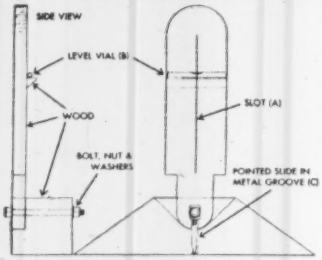
The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

"Are you on the target?"

"You can easily build yourself an excellent target for both day and night work," writes H. M. Stanley, a Construction Engineer of Roanoke, Va. "Just follow this sketch:



"Use good, dry hardwood. The upright section should have a 1/32" slot *(A in diagram)*, through which light is visible. A bracket on the reverse of the upright–fastened at right angles to longitudinal slot–holds a level vial *(B)* The slot is vertical when vial is level.

"The upright section is held to a base by a pivot bolt. Also attached at the bolt is a pointed metal slide, moving in a metal groove *(C)*. This slide moves through a line which is a projection of the vertical slot. It can be extended to position the slot accurately over a point on sloping terrain.

"At night I use a three-battery flashlight, held by a wire frame behind the slot. By day, the sun is reflected through the slot by a mirror. Having used mirrors in the national forests, I recommend them for day work. For day or night work, I recommend my Gurley reticle. It makes any problem a pleasure."

Level on stilts

Have you tried this method for leveling over corn fields or groves of fruit trees? Letters from all over are telling us how surveyors are finding this short cut helpful. All you do is remove the sliding legs from your extension tripod and replace them with lengths of one-inch thinwall conduit.

"Let's give credit where credit is due," says James Ritchie, Field Engineer for Charles E. DeLeuw, Consulting Engineer, Amherst, Ohio, who used the tip on the Ohio Turnpike. "We learned about this from 'The Surveyor's Notebook', put out by Gurley, maker of the best level ever built."

Leveling over Ohio corn field.

"The Surveyor's Notebook" collection is crowded with many field hints like these. More than 30,000 surveyors and engineers are finding these reports helpful. Write for your free copy of **Series 2.**

Ask to see the NEW Variable Power Eyepiece

Now standard on all Gurley levels, Variable Power eliminates the need for more than one eyepiece in changes of magnification. With "VP" you go from high to low and back again–with stops anywhere in between.

"VP" offers you a clear, flat field, devoid of aberrations at any magnification. You have all the power required for the longest sight, and reduced power for local conditions.

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ENR staff photos

AQUATIC SCRAPER—A wet spring slowed many contract operations on the thruway, but a few were fortunate to be in gravelly country. Here, Ralph Dutcher's scrapers ford borrow across Canandaigua Outlet southeast of Rochester.

A photo-progress report:

Thruway cuts its swath across New York State

(Second of a series)

There is so much construction equipment at work along the New York Thruway route this year that you wonder whether there is any left for other projects in the northeastern part of the United States.

And the list of contractors is practically a roll-call of the roadbuilders ENR has visited since the war, from Maine to Pennsylvania, with several more added on. There are nearly 40, handling about 90 contracts.

New England contractors are strongly represented, Lane Const. Co. of Meriden, Conn., holding ten contracts and Savin Const. Co., of East Hartford, Conn., holding six. D. W. Winkelman, Inc., of Syracuse tops the homestate contractor list, with seven jobs.

The best stretch of thruway to visit late this spring was the east-west leg between Albany and Buffalo, because a higher proportion of contracts was well along there than in the portion southward from Albany to New York.

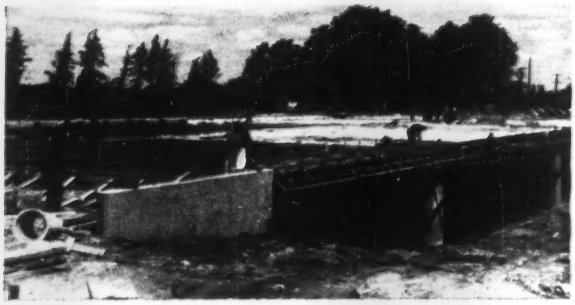
FAST PAVING—Several contractors are laying 2,000-odd ft of single-lane concrete daily already this season. This is S. J. Groves spread near Seneca Falls.

At that, finding the jobs was a bird-dog operation. The entire location is on new right-of-way, so frequently it's necessary to zig-zag on county roads in order to find the work. (But it is there. Hardly a mile of the location is without some roadbuilding activity.)

At other places the thruway goes conveniently alongside existing routes. This is the case west of Schenectady, where the location hugs the Mohawk River most of the way to Utica. At Amsterdam, Lane is well along with the paving on a job started last year. A short distance farther, C. L. Guild, of East Providence, R. I., is driving cast-in-place piles with a pneumatic mandrel that expands inside the casing, transmitting driving force to the casing wall by friction (ENR Jan. 11, 1951, p. 35). (Most of the cast-in-place piles for thruway bridges are being driven by this method.) Guild is subcontractor for B. Perini Sons, Framingham, Mass., at this location. Westward a short distance Perini is building a few hundred feet of the new road through the middle of Fultonville, cutting a swath through barns, residences and business establishments.

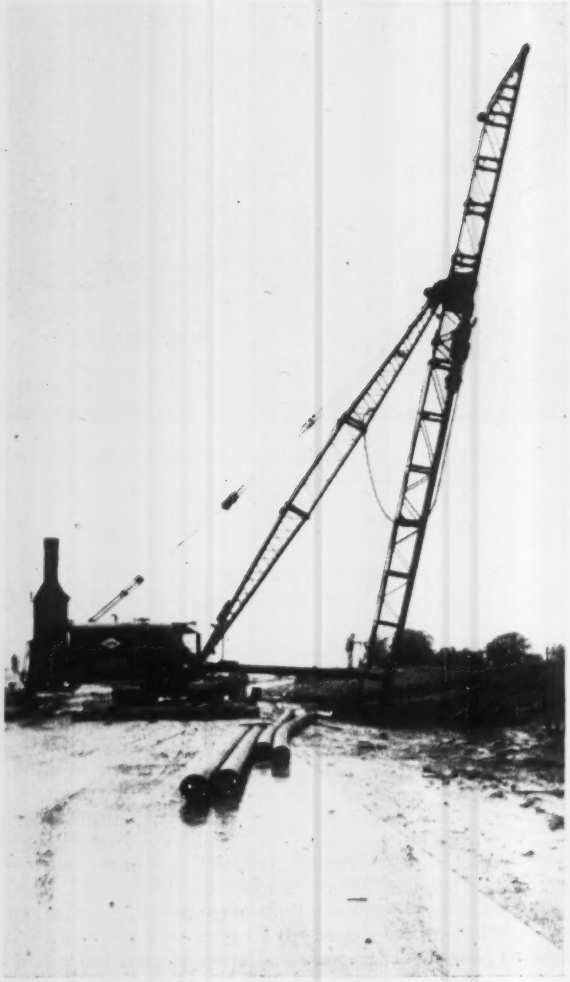
Just east of Sprakers the river channel of the New York Barge Canal is being moved into the north bank to make room for the thruway on the south bank. A Dunbar and Sullivan

Thruway bridges: one per mile

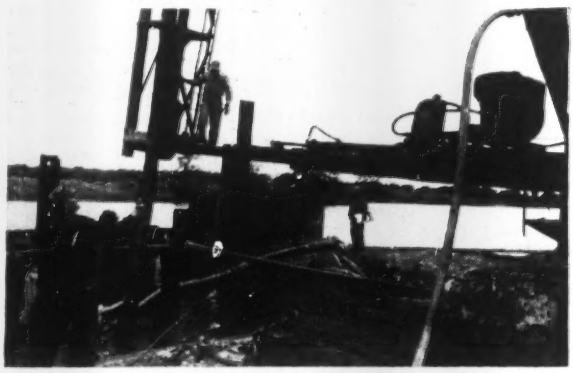


MANY BRIDGES, about one in each of the thruway's 427 miles, are under construction. This one is southwest of Rochester.

GRAVELLY FORMATION at Canandaigua Outlet is dried by wellpoints. Cast-in-place piles here are of the step-taper type.



PNEUMATIC PILEDRIVING—Most structures rest on cast-in-place piles with casings placed by an air-expanded mandrel.



HYDRAULIC RAM sets spreader of piledriver at Seneca River Bridge pier. All but 16 of 800 piles here are set at a batter.

(Detroit, Mich.) dredge is doing the digging, pumping fill behind new rock berms or an existing road.

When ENR traveled the route, here is what some of the contractors between Canajoharie and Canastota were seen doing: A. S. Wikstrom, of Skaneateles, was bringing in several bottom-dump wagons to enlarge a grading operation; S. J. Groves, of Syracuse, was erecting a batch plant (his grading was going nicely); Lane was setting slope stakes for a new contract in the hills south of Little Falls; Collins Bros., Mechanicville, was building a bridge above Herkimer; Arute Bros., New Britain, Conn., grading and Savin was building an interchange. Savin's headquarters, by the way, was reminiscent of his setups on New Hampshire Turnpike four years ago and, more recently, on Newburyport Turnpike relocation in Massachusetts: the rugged, demountable maintenance shed has become a sort of trademark on Savin jobs. Both Arute and Savin are west of Utica, where the pressure is greatest this year. The New York Thruway authority plans to collect tolls on the 150-mile Utica-Batavia section beginning early next winter. Deadline for the rest is a year later.

Just east of the Savin job is the longest completed piece of thruway—about 25 miles to a point northwest of Syracuse and near Onondaga Lake outlet. A Guild rig was driving piles on this stretch, for an interchange built by Dann-Barr Contg. Co., and W. E. O'Neil Const. Co., of Syracuse.

Beyond, at Onondaga Lake outlet, Winkelman had more Guild rigs, driving piles for a bridge across the outlet. This is the only thruway contract where vertical sand drains, such as those that were used so widely on the New Jersey Turnpike, were specified to consolidate a muck subgrade. A few miles farther, where the route crosses Montezuma swamp, Wikstrom removed 800,000 cu yd of muck from

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More work per dollar . . . and here are 4 powerful reasons why!

MORE POWER AT LOWER COST! Watch costs go down when you put the new heavy-duty power of Chevrolet's advanced Loadmaster engine to work! The new high-compression ratio of 7.1 to 1 in this great engine brings you more power and even greater economy than before. Chevrolet's Thriftmaster engine, too, in light- and medium-duty models offers exceptional economy of operation.

FACTORY-MATCHED TO THE JOB! Some jobs demand more power. Some demand stronger springs. But, *whatever* the requirements of your job, Chevrolet trucks are carefully *factory-matched* to the work to be done, with the *right* power—and the *right* units from tires to axle, springs to clutch—to handle that work at lowest cost.

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LOWEST PRICED LINE! Chevrolet trucks are known for qualities and features matched by no other trucks. Yet, with all these advantages, the Chevrolet line lists for less than any other trucks of comparable size and specifications. See your Chevrolet dealer. Chevrolet Division of General Motors, Detroit 2, Michigan.

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TWO GREAT VALVE-IN-HEAD ENGINES—the Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load. **POWER-JET CARBURETOR**—for smooth, quick acceleration response. **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement. **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **HYPOID REAR AXLE**—for dependability and long life. **TORQUE-ACTION BRAKES**—on light-duty and medium-duty models and on front of heavy-duty models. **TWIN-ACTION REAR BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models. **CAB SEAT**—with double deck springs for complete riding comfort. **VENTIPANES**—for improved cab ventilation. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—for easier handling. **UNIT-DESIGNED BODIES**—for greater load protection. **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.

CHEVROLET

first in demand in value in sales

HERE ARE HELTZEL'S NEW *COMPLETELY AUTOMATIC ELECTRONICALLY CONTROLLED* BATCHING PLANTS...

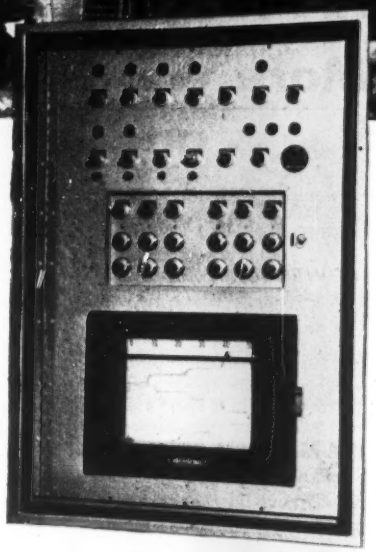
Two new Heltzel Batching Plants at work on the Ohio Turnpike. Built to conform with Ohio Turnpike Commission specifications, the Cement Plant (left) has a 400 bbl. capacity with a 375 bbl. recirculator. Three-compartment aggregate Plant (right) holds up to 200 tons.

Here's real news for contractors who want batching equipment that will do more with less labor. The new electronically actuated fully automatic Heltzel plants designed for road builders, truck mixer and central mix operations.

Push button operated by one man these job-tested plants will batch up to 250 yards of perfectly proportioned batches per hour . . . with 29 separate batch combinations immediately available to the operator. Each batch, time and amount electrically recorded for easy daily tabulation.

Portable, the plants were designed for quick set-up and knock-down, easy over-the-road handling. For permanent installation Heltzel's combination cement-aggregate plant would be used instead of two separate plants.

For additional information write or call **The Heltzel Steel Form and Iron Co., Warren, Ohio,** and ask for Bulletin O-21.



Push button panel with recording equipment. Each of the 29 batch selection buttons controls a completely different mix. Panel will be wired to suit your individual requirements. Recording equipment optional.

— Naturally It's A Heltzel / Flex-Plane *Product —*

MONTEZUMA SWAMP crossing called for 800,000 cu yd of muck removal, for replacement by borrow. Note how muck has pushed swamp grass back. Muck was hard to handle, and it would slide dangerously if piled up. Bulldozer blade on dragline spread it.

CANAL RELOCATION—Along Mohawk River, channel is moved to make room for thruway. Dunbar and Sullivan dredge tail pipe ducks under barge channel.

AND OTHER OBSTACLES—Buildings and even a small town are being moved aside to make way for the new road. This is another S. J. Groves job.

three miles of thruway last year, replacing it with borrow.

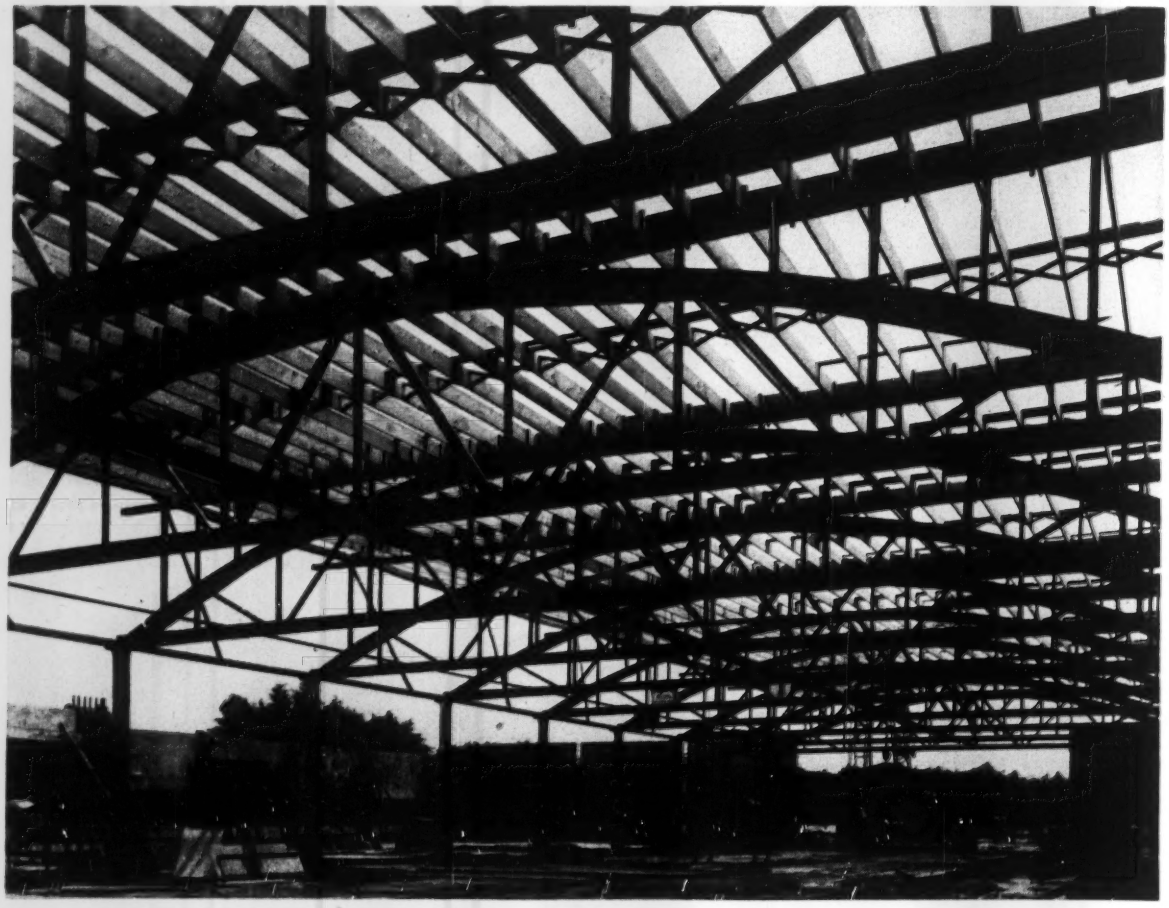
Montezuma Swamp, which lies at the north end of Lake Cayuga, is a federal wild-life refuge, but it makes poor ground for roadbuilding. Wikstrom built marginal dikes 160 ft apart, out from the shore, dumping them on the marsh muck. Crossdikes about 1000 ft apart isolated work areas, where he draglined 2 to 10 ft of muck, down to a decomposed calcareous layer (called marl) underlain by wet silt. Draglines worked from the dikes, first cutting a centerline channel to a pump sump so the muck could be drained for easier handling. Muck cast outside the dikes would slide seriously if piled more than a few feet, so Wikstrom rigged a bulldozer blade on a dragline, making a sort of skimmer that spread the muck outward when the boom was lowered.

Light equipment carefully spread 2 to 3 ft of borrow on the touchy marl, making a base on which heavy machines could work, and filling began. The fill was compacted up to subgrade level, then surcharged 3 to 7 ft, depending on the depth of fill. That was in 1952. This year the surcharge has been removed (Almost no settlement noted) and paving is under way.

The Wikstrom contract also includes the substructures for twin parallel 3-lane deck-girder cantilever bridges across Seneca River, which runs along the swamp's east edge. Each of main piers is to be supported on 200 timber piles, 196 of which are batter piles. When ENR visited the job the pile-driver was rigged with a hydraulic ram for adjusting leads to the correct batter. (Guild does this with winch lines.)

West of Montezuma Swamp, Groves was well along with paving on a 9-mi section begun last year. Beyond, Johnson, Drake and Piper was hard at work on a 13-mi grading and paving contract begun only this year. Cast-in-place pile contractor here is Raymond Concrete Pile Co. There is lots of good gravel in this part of New York, so JDP has not been bothered with the spring's wet mud the way many thruway contractors have been. In fact, at one place where this contract crosses Canandaigua Outlet, grading subcontractor Ralph Dutcher (Queenstown, Md.) is fording a substantial amount of his borrow. Although the scraper's bowl is immersed two feet, the load hardly gets wet.

The final site visited was a six-lane bridge that carries U. S. 15 over the thruway at West Henrietta, built by H. L. Baughman, Inc., of Rochester. Grading and paving as well as interchange contractor here was Arute.



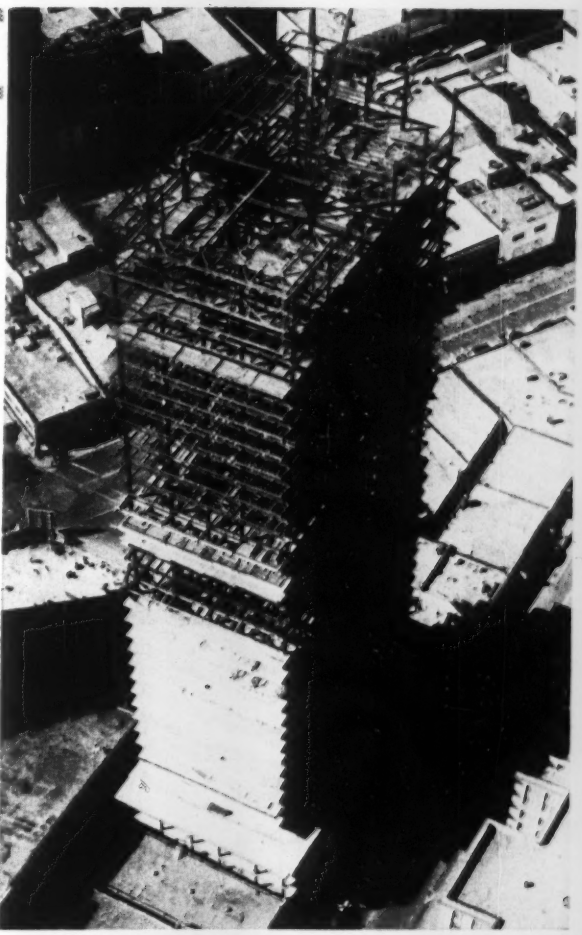
The first and main building of the new $64-million government Medical Research Center at Bethesda, Md., is formally dedicated by Secretary of Welfare Oveta Culp Hobby. The completed building, (seen in the background) costing about $20 million, will be devoted to research in the fields of heart disease and cancer.

Wide World Photo

TWO DEDICATIONS

When it came time to dedicate the Queen Creek tunnel on U. S. 60-70 east of Superior, Arizona, the Fisher Contracting Co., decided on an appropriate dedication platform—the drill rig used in boring the tunnel. The rig provided room for speakers, officials and a brass band—with room left over. The completed $1.5 million tunnel is part of a new section of highway that eliminates one of the worst stretches of Arizona highway.

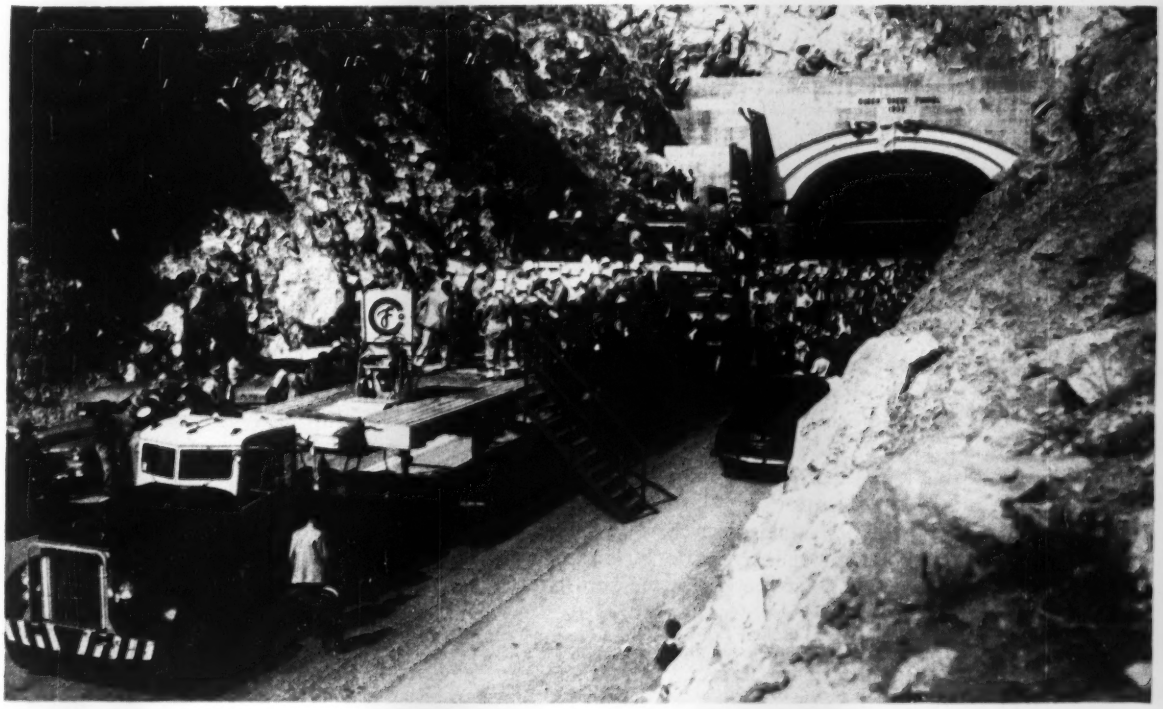
BIGGEST TIMBER ROOF



The country's largest warehouse area roofed with timber—1¼ million sq ft in two buildings, 500x500 and 500x2,002 ft—will soon be ready (at Franconia, Va., south of Washington) to store some of the mountains of supplies of the government's General Services Administration. Using 773 bowstring timber trusses of 71-ft span and 4,200,000 additional board feet of Douglas fir timber in columns, roof joists and sheathing, the project is also notable for concrete walls built by the tilt-up method. The trusses were prefabricated in Portland, Ore., by Timber Structures, Inc., and assembled on the job with split-ring connectors furnished by the Timber Engineering Co. Barrett & Hilp, San Francisco, is the general contractor and Ward & Bolles of the same city is the architect.

BIRDSEYE VIEW

Casting a 36-story shadow across Dallas, Texas, is the new Republic National Bank Building (ENR March 19 p. 24). The slender tower of steel and concrete is scheduled for completion in 1954 and will serve as an office building with the bank occupying space fronting on the city's Pacific Street. When completed next year the building will be the tallest in the state.



Wire Rope at Work—Near Hazleton, Pa., lie rich seams of anthracite coal which in places are not far below the surface of the ground. The dragline excavator shown here, owned by A. E. Dick Contracting Co., is getting at the coal by stripping off overburden—the cover of earth that is about 120 ft in thickness at this particular point.

Using a 22-yd bucket, the excavator can scoop up thousands of cubic yards of dirt and rock per day. It works 'round the clock, with only minor interruptions. This mechanical mastodon is fitted throughout with Bethlehem Wire Rope, including twin draglines and hoist lines, visible in the picture as they handle the bucket. A typical assignment, the kind of rough, tough job entrusted to Bethlehem rope in every type of industry, wherever there is heavy lifting or hauling to be done.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors all over the country stock Bethlehem rope for the following industries and numerous others:

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

FIRST OPERATION uses four-ft moldboard to windrow accumulated sand and dirt under guard rail cable.

New weapon used in berm warfare

Job-made device simplifies accumulated berm removal at one-eighth the cost of hand methods of removal

A new method for removal of the earth berm created by accumulations of winter sand and dirt has been developed by two members of the Connecticut State Highway Dept., J. J. Blaney, equipment inspector, and S. Choma, garage foreman.

With about $200 dollars worth of salvage, scrap and obsolete materials Choma built a unit consisting of a double-acting hydraulic cylinder attached to a 7-ft long H-beam, which slides back and forth on a stationary I-beam attached to the front end of a four-wheel drive truck. The horizontal throw or sliding movement of the H-beam is five feet.

Pressure to actuate the hydraulic cylinder is obtained from a cylinder that raises and lowers wing plow attachments used for snow removal.

Two interchangeable moldboard scraper attachments are used to remove the berm. A 4-ft long moldboard mounted at an angle on the H-beam is used for blading the accumulated sand and dirt into a windrow directly under the guard rail cable.

After a strip has been windrowed, a two-minute operation changes blades to a 5-ft moldboard that is mounted at a right angle to the H-beam. The hydraulic system is then brought into play as the windrow of dirt is pushed from under the guard rail to the outer slope of the roadside. The cleared area is then leveled by hand.

The first operation is a continuous one, the truck moving along the roadside with the 4-ft moldboard much in the same manner as a snowplow or grader works. The second operation is intermittent and therefore much slower. After the windrow has been pushed to the side the truck must be repositioned.

Before the removal technique was developed, the accumulated berms caused drainage problems and supported unsightly weed growth that required continual hand cutting. Comparative production studies indicate that the machine removes eight times as much material per unit cost as hand methods do. Further, the highway department estimates that 3,500 linear feet can be removed in eight hours with the new device.

As a final touch, the guard rail area is oiled for stabilization and prevention of further weed growth.

SECOND OPERATION pushes windrowed material five ft behind guard rail.

Plastic bags protect sterilized safety hats

Every new construction job brings recruitment of new employees, instructing each individual on safety policies, and alerting him to the various job hazards. During the initial briefing period the new man is issued necessary personal safety equipment such as goggles and hard hat.

Since the cost of such items, mul-

You can drive studs ARROW STRAIGHT into steel or concrete with

MODEL 450 REMINGTON STUD DRIVER

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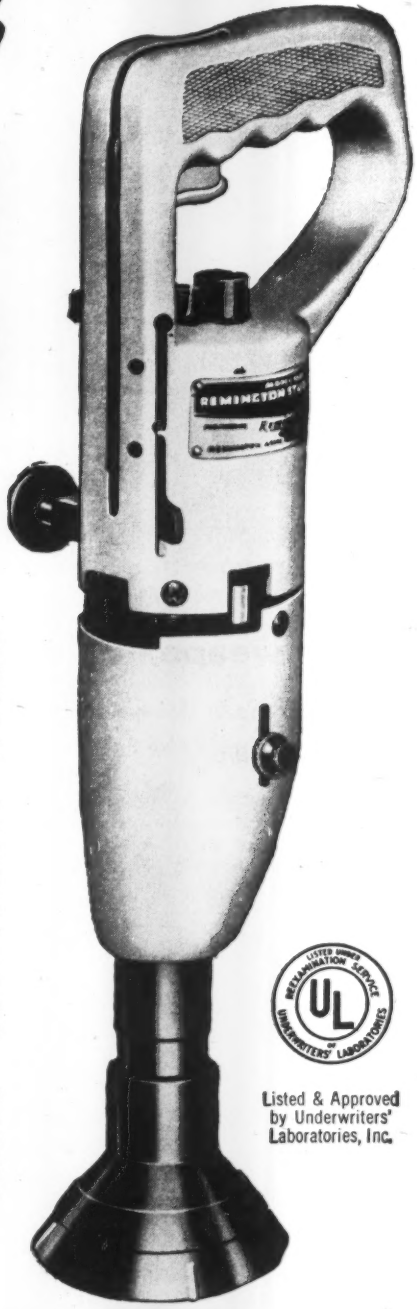

The Model 450 Remington Stud Driver is the most efficient fastening method in use today. Its exclusive advantages are unequaled by any other powder-actuated tool.

You get consistently straight driving on every type of fastening job with the long heel cap on all Remington cartridges. It acts as a perfect gas seal and provides extra power. These colored heel caps clearly mark the six different 32-caliber power loads that are available. You can select the *right* cartridge for each job quickly and easily.

The Remington Stud Driver needs no separate parts for power control or loading—nothing to lose or break. Just a twist of the wrist opens the Model 450. Insert stud and power cartridge as a unit . . . close and you're ready. Triple safe, this superior tool has a separate lever that must be depressed and *held* with one hand before and during squeezing of the trigger with the other hand. Two *additional* devices prevent operation except in proper fastening position.

Completely self-powered, the Model 450 sets up to 5 studs per minute in fastening steel or wood structural pieces to concrete or steel surfaces. Its light weight—only 5½ pounds—makes it ideal for use overhead or in confined spaces. To speed operation further, an exclusive ejector snaps the fired case out of the tool instantly—no fumbling, no tools needed.

Test-proved to be the world's finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest sporting arms manufacturer.*

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CLEAN HATS stay clean for reissue to new men on the next job.

these raincoats, boots, hats, respirators and goggles before re-issue is easy. But, in addition, on our jobs we wanted proof that would assure the next wearer the articles were clean and sanitary. Direct evidence of this cleanliness and interest in the employees' welfare plays an important part in gaining their full cooperation in other safety practices that come first on every Dravo job.

Our practice is to repackage such items as goggles and hats immediately after cleaning and sterilizing. For instance, every hat is cleaned, sterilized and fitted with a new sweat band. Final touch is to seal the hat inside a transparent plastic bag where it remains until removed by the next wearer.

With such first-hand evidence there is no question in the recipient's mind as to the sanitary condition of his hat: It has a fresh clean look because it has been protected against dust and handling since being sterilized.—J. B. Kovach, Dravo Corp., Pittsburgh, Pa.

tiplied by the number needed, runs into an appreciable total, they must be reclaimed at the completion of each project. Cleaning and sterilization of

Screw feed on scraper pads trench

Anderson Bros. Corp., of Houston, Tex., welded shut the apron of this 275-hp carrying scraper and installed a screw feed, which pulls dirt out of the bowl and lays it on the bottom of a trench as the scraper moves beside the trench. Dirt is required to pad 150 miles of 24-in. pipe being laid in rocky country between Menard and Cedar Valley, Tex., for Rancho Pipeline Co.

Before the rig was put into operation, the padding crew consisted of 35 men and seven dump trucks. The rig made it possible to cover more footage per day with 15 men and one truck.

The scraper has an independently actuated hydraulic ejector that makes it possible to control flow of material to the screw, which, lying horizontally in front of and above the scraper's cutting edge, is chain-driven from an engine on top of the bowl. The scraper is top-loaded with a front-end loader.

FOR PIPELINE PROTECTION—Modified carrying scraper feeds dirt into trench to pad pipeline in rocky Texas country.

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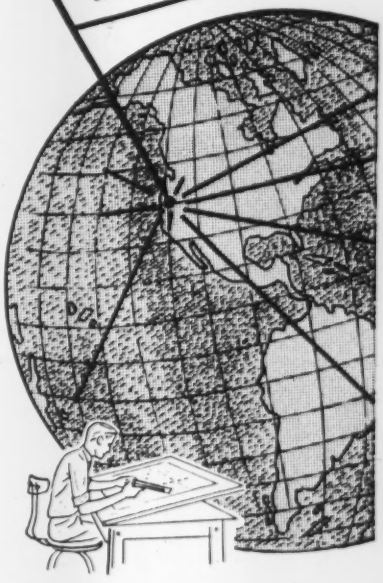

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HEALTHY HOGS mean healthy towns and are a source of revenue to these towns.

Garbage for hogs?—Cook it

Communities, wrestling with their garbage disposal problems have been studying with increasing alarm the mounting peaks of household refuse threatening to engulf them, as populations grow.

Two traditional disposal methods —landfill and incineration—haven't proved complete solutions. While landfill methods are satisfactory where land is available, high cost of fill sites and, in some cases, complete lack of suitable land pose the question—where next? An answer may reside in a much older method—swine feeding—again under intensive investigation.

Incineration to total destruction is an ideal sought by designers of municipal incinerators, and 80 to 90% reduction in volume may be the practical result. But the over-all cost of incineration is prohibitive, to many smaller communities: Initial cost of the plant is high, and operation may be costly even with a well-designed and efficiently run plant.

• **To the pigs**—Swine feeding has long been a principal method of waste disposal, and it sometimes provides a source of revenue. But the practice has dwindled: 18 states prohibit feeding raw garbage to hogs, nine are considering such legislation, and three more restrict the practice through requirements of the state health or agricultural departments.

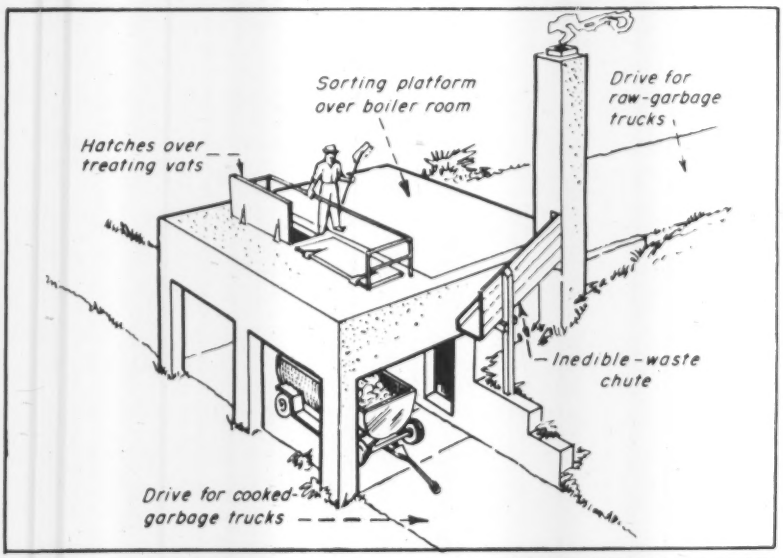
Some of these objections, new information indicates, could be overcome by "cooking" raw garbage before offering it to the swine. Many hog feeders object. They insist that cooking garbage will drive them out of business. Their contention is that the only satisfactory garbage for cooking is that from restaurants, hotels and institutions. These sources abound only in large cities whose outskirts are usually highly residental and not favorably inclined toward piggeries.

But the Sanitary Engineering Dept. of the United States Public Health Service points out that England and Canada have required cooking of garbage used for swine feeding for many years and are making it pay.

The cost of the cooking plant, used abroad with its sorting house, conveyors, boiler, and cooking house is high, and the application in the U.S. would be limited to cities, Army installations, or joint operation by groups of municipalities.

USPHS, therefore, advocates small plant units operated at a pressure not requiring licensed operators. Variations of the two-level plant layout for steam injection into open vats as shown in the illustration is recommended for the average municipality.

• **Cost a factor**—The boiler necessary for the operation of a plant of this



TYPICAL TWO-LEVEL garbage-cooking plant approved by the United States Public Health Service for use by a small municipality. The sorting platform may be designed in variations according to the salvage operations to be carried on. A 50 hp. boiler would furnish an adequate steam supply for operation.

type would cost less than $5,000, according to an estimate received from a "package" boiler manufacturer, and the structure would cost a small fraction of the cost of an incinerator. Multi-purpose equipment could be used for the heating medium: a portable steam-cleaning unit which could be pressed into valuable service with other municipal departments.

The sorting platform may be designed with two or more bins for inedible refuse, depending upon how much salvage material is to be reclaimed. The vats, of concrete, steel or wood with permanent heating coils installed, should have large charging hatches leading directly off the inclined sorting platform.

Open access drives for cooked-garbage trucks or trailers may be under the vats or adjacent and below, allowing discharge into the vehicle through chutes. Cooling vats may be included in the plant design releasing the vehicles from this time-consuming operation.

• **How much heat?**—Experiments have shown that a 4-hp boiler will produce the steam necessary to heat ½ ton of garbage in one hour with a one-hour warmup period. The same boiler can heat one ton of garbage in two hours, and using this straight-line relationship, a 40-hp boiler would be necessary for the processing of five tons (2,170 gal.) in one hour at 10 psi. and a temperature of 212 degrees F.

• **Cooking in truck bodies**—In order to conform with regulations, swine feeders are faced with losses during installation of cooking apparatus. In anticipation, the USDA and the Public Health Service have, by experimentation, devised a method of sterilization in the truck bodies themselves. It was stressed that this is an expedient method, and not approved as a standard procedure.

The truck body used in the experiments was a 15'x8'x3' rectangular tank body (12 ton) equipped with a semi-cylindrical sliding cover. A two-inch steam supply line from the boiler was attached by universal coupling to a two-inch supply line permanently installed on the truck body. This main supplied a 1¼-in. header with seven ¾-in. branches running axially along the bed of the body 14 in. O.C. The end of each branch was carried through the bed of the truck and ended in a manually operated blow-off cock for cleaning of lines.

Two 3/32-in. holes were drilled six

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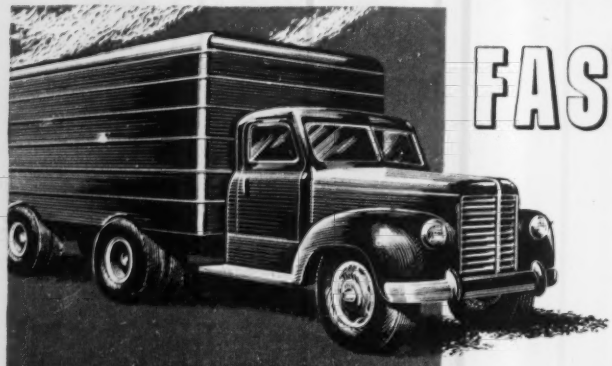

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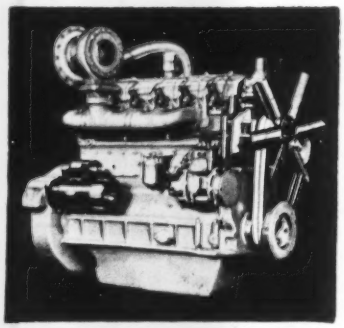

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in. O.C. for the length of each branch, and steam was released through these into the material. The steam was furnished by a 150-hp, oil-fired, horizontal-type boiler at between 45 and 55 psi. The boiler was used concurrently to provide heat for the animal barns.

While the apparatus worked satisfactorily, operators stressed the need for constant agitation for acceptable results.

• **Business angle**—According to "Public Works Engineer's Special Report No. 15" released jointly by the AMA and APWA, three cities are actually in the swine-raising business. Flint, Mich., Kansas City, Mo., and Rochester, Minn. operate their own piggeries. Prison labor is most widely utilized, and good return on investments is claimed. The Kansas City establishment, according to the report, has the only operating municipal program at present.

The report presents the result of a survey of the practices of 170 municipalities using swine feeding as a method of disposing of kitchen waste. Most of the towns investigated (70%) make arrangements with private contractors to dispose of the waste at piggerics, but 27 municipalities deliver the garbage to the stock farms with their own equipment.

It is shown that 12 towns use combined municipal and private contractors, nine use swine feeding as one of several methods, and 12 handle only commercial garbage of restaurants, hotels and institutions, after the Canadian practice.

• **Garbage a source of revenue**—Twenty-three communities mostly in California, collect garbage with municipal crews and sell it to hog farmers as a source of revenue.

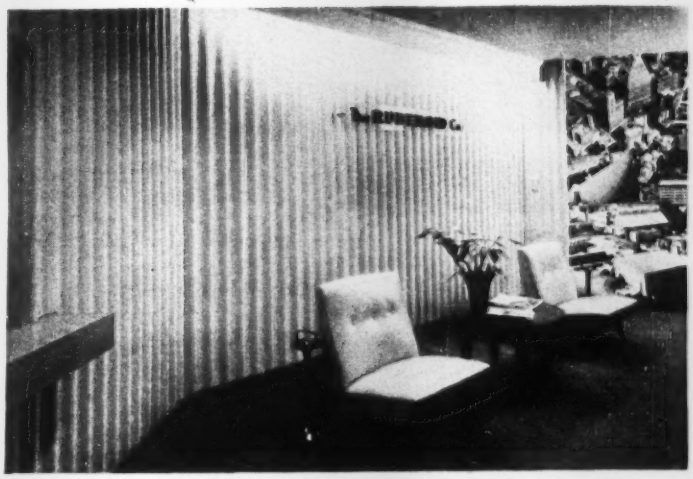
One-hundred-ten officials reported door-to-door collections and delivery to piggeries, and 32 collect door-to-door and deliver to a central loading point where it is sold or picked up by hog farmers.

Many municipalities obtain revenue from garbage collected within their corporate limits. "Privilege charges" extract $100 to $200 per year from collectors working in the towns, while in some cases per-capita rates are set, varying from five cents per inhabitant to 17 cents. Twenty-seven towns charge individual house owners or commercial establishments for collections.

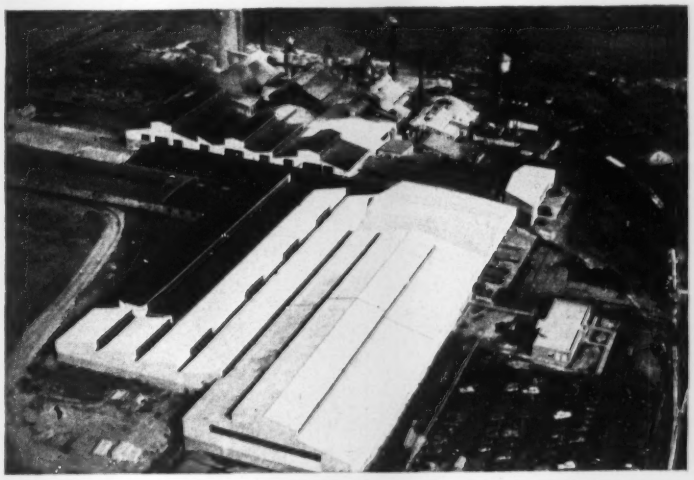
During the past three years 17 municipalities have abandoned swine feeding operations, most in favor of landfill, two turning to incineration,

Facts you should know about . . .

RUBEROID CORRUGATED ASBESTOS SHEETS



Reception room wall illustrates decorative effects obtainable with Ruberoid Corrugated Asbestos Sheets



Many industrial plants like this one at Streator, Illinois, use Ruberoid Corrugated Asbestos Sheets for neat, durable roofs and sidewalls

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Ruberoid Corrugated Asbestos permits the use of lightweight supporting members and lighter foundations and footings. The application is easy and rapid. Besides its use on sidewalls and roofs it lends itself to interior architectural treatments.

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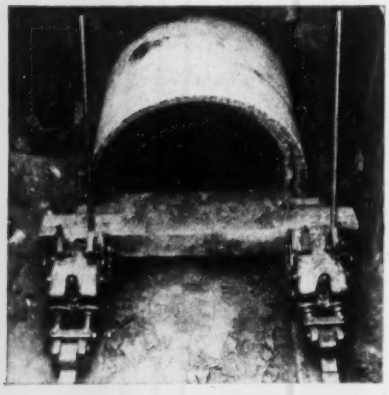

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one to composting, and one to temporary grinding operation preparatory to garbage cooking.

Fifty-seven communities plan a change in the face of legislation prohibiting the feeding of raw garbage to hogs in their states. Only seven of these plan garbage-cooking programs immediately, two planning to use the method sometime in the future.

Philadelphia reports that garbage now being fed to hogs will be treated in the reduction plant which in 1952 treated 19% of the city's household garbage. Value of the grease extracted at the plant was placed at $29,000.

• **Sample**—The AMA and APWA report presents an example in the economies as one farmer offers it.

Pigs to be fed on raw garbage must be purchased at 80 to 110 lb. To withstand the shock of change from grain to raw wastes. But animals weighing only 40 lb. can survive the change to cooked garbage with no ill effects. Losses from raw-fed herds averaged 15 per thousand per month over a four-month period as compared to two per thousand per month over a five-month period with the cooked-fed swine. This was a 6% loss as compared to the 1% loss by the time the pigs reached their 250-lb. marketable weight.

• **Raw Garbage Results:**

(1) 1,000 hogs @ 100 lb.=100,000 lb. pork.

(2) 940 hogs @ 250 lb.=235,000 lb. pork.

Difference in initial prices ($20/cwt.)

(3) 100x1,000x20/100=$20,000.

• **Cooked garbage results:**

(1) 1,000 hogs @ 40 lb.=40,000 lb. pork.

(2) 990 hogs @ 250 lb.=247,500 lb. pork.

(3) 40x1,000–x20/100=$8,000.

Saved on initial purchase: $20,000 –8,000=$12,000.

Saved on pork due to lowered mortality rate $2,500.

Total savings: $14,500

(4) One ton of raw garbage produced 50 lb. of pork with no appreciable difference in gain of raw-garbage-fed hogs over cooked-garbage-fed hogs.

Therefore: 247,000 lb.–40,000 lb.= 4,175 tons cooked garbage required to feed lot to 250 lb., and 235,000 lb.– 100,000 lb.=2,700 tons raw garbage required to feed lot to 250. Thus, because of lower weight at purchase and longer period, 4,175–2,700=1,475 more tons of cooked garbage used.

(5) Average cost per ton of raw garbage–$2.03, the increased cost of feed for the lot 1,475x$2.03= approx. $3,000. Increased cost through cooking 4,175x.75/ton= $3,132. Therefore the increased cost of feeding cooked material $6,132, and for 1,000 hogs total savings amount to $14,500–$6,132=$8,368.

(*Municipal continued on p. 70*)

BIG ONE—Florida's tallest office building is scheduled for completion late in 1954. Twenty-two stories high and constructed with riveted structural steel frame, it will be faced with limestone over granite base. Cost of the structural will be $20 million.

Weston Power Plant, Rothschild, Wis.—Engineers: Pioneer Service & Engineering Co., Chicago, Ill.—Owner: Wisconsin Public Service Corporation, Milwaukee, Wis.

WELLPOINTS ELIMINATE SHEETING...

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Construction costs took a nose dive when the engineers on the Weston Power Plant constructed an earth-fill cofferdam and predrained the wet excavation with a Moretrench Wellpoint System.

Confidence in the efficiency of Moretrench Equipment enabled the pumping contractor, American Dewatering Corporation, New York, *to guarantee results in a limited period of time.*

Three days after pumping started, 16′ of water had disappeared and they were excavating "in the dry" at a considerable saving of time and money. During flood stage of the river, 25′ of water were handled perfectly.

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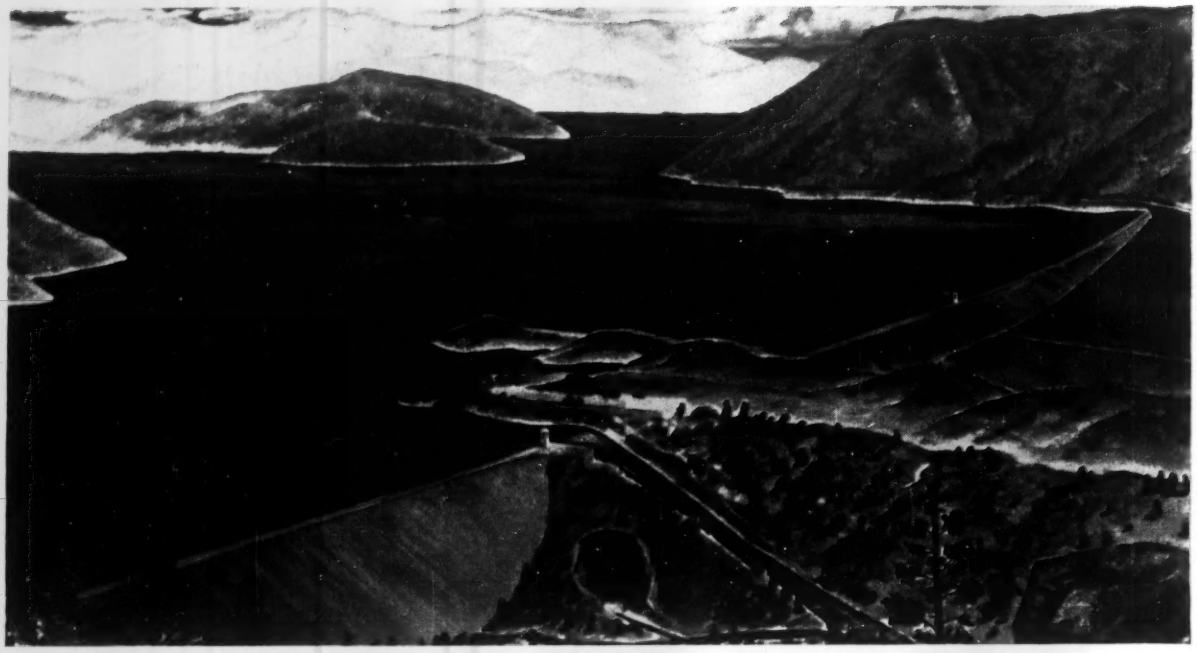


Isabella Dam shows the main dam, lower left, and auxiliary dam at right. Granite hill between the two units has outlet tunnel passing through it and spillway over it. Canal feeding from auxiliary dam supplies a power company with water to turn turbines.

2,900,000 cu. yds. of fill moved quickly on Isabella Dam

CAT* equipment and one of the largest rippers ever built team to build a dam to control the Kern River

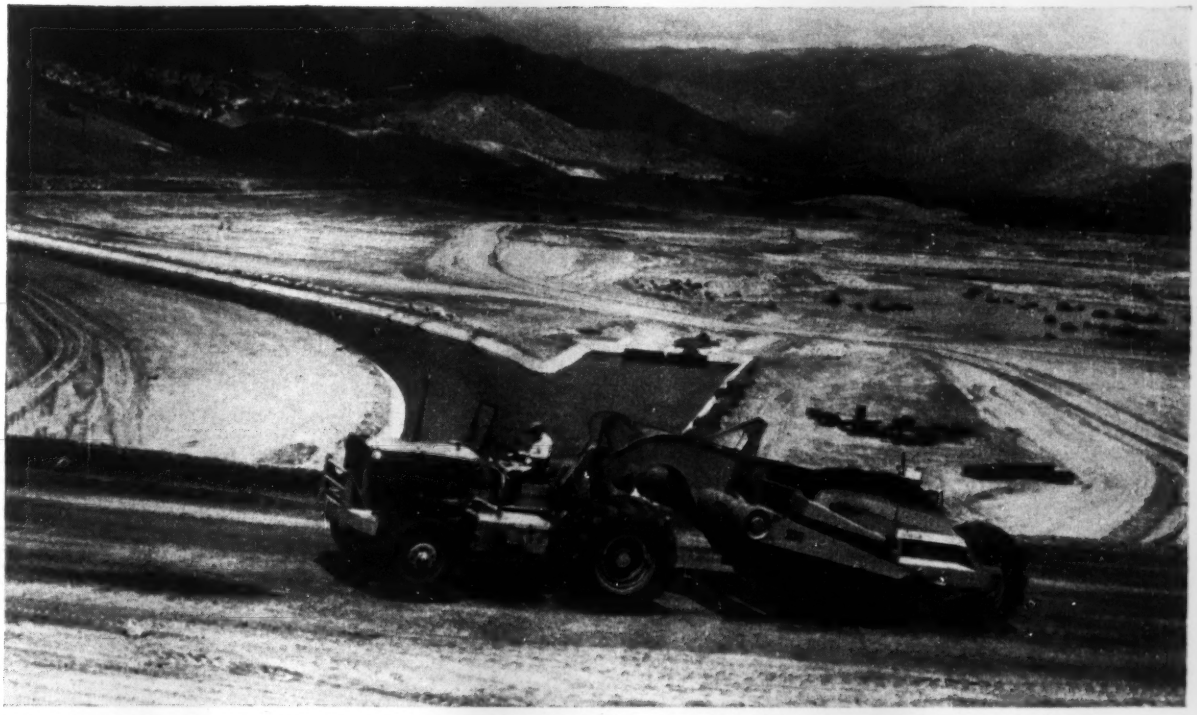
Isabella Dam, 1,725 feet in length and 185 feet high, is ready to tame the unpredictable Kern River in California. Its completion relieves Bakersfield of the menace of floods and brings promise of greater irrigation to the lower San Joaquin Valley.

The idea was to regulate the Kern, a river of extremes. Its annual flow varies from 1,900,000 acre-feet to as little as 185,000. To do the job Isabella Dam is divided into two sections: the main dam consisting of 2,900,000 cu. yds. of fill; the auxiliary dam, 100 feet high, 3,325 feet long with 1,800,000 cu. yds. of fill. Separating the two is a hill of granite, through which has been holed the 800-foot main outlet tunnel, and over which passes the spillway.

Macco Corporation, Morrison-Knudsen Company Inc., and River Construction Corporation were awarded a $5,873,782 contract for constructing the main dam, completing the auxiliary dam, realigning a section of the canal and building a spillway. They enlisted the aid of a fleet of dependable, swift Caterpillar* machines to do the job which was designed and supervised by the Sacramento District, Corps of Engineers, U. S. Army.

The 2,900,000 yards of fill for the main dam was decomposed granite. Using Cat DW20 Tractors and matching Scrapers, the contractors hauled a daily average of 25,000 cu. yds. over a distance of 4,000 feet in two 9-hour shifts.

The material was broken up by rippers, including one of the largest rippers ever built. Aluminum irrigation pipe was laid across the broken area. The material was sprinkled for several hours, sometimes as much as 48 hours, after which it was picked up by earth-eating DW20 Tractors and Scrapers. Compaction was obtained by a 50-ton Southwest rubber-tired tamper pulled by a



CAT DW20 AND SCRAPER hauls part of the 2,900,000 cu. yds. of fill needed for the main dam. Contractors used a fleet of DW20s on the job, along with D8s, No. 12 Motor Graders and D13000 Engines. With a haul distance of 4,000 feet, the DW20s carried a daily average of 25,000 cu. yds. in two 9-hour shifts per day. Most of the fill was decomposed granite.

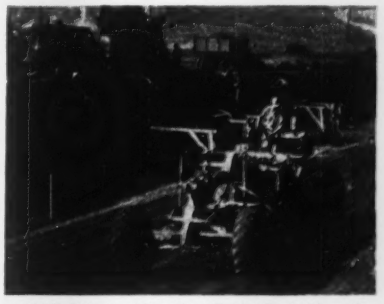
DW20. Working in conjunction with the tamper was another DW20 pulling an 18-foot offset disk.

Rugged Caterpillar equipment entered into every phase of the job. In all, the contractors made use of fourteen DW20s with Scrapers, three DW20s with plows and compactors, eight D8s, two No. 12 Motor Graders and D13000 Diesel Engines to power Gardner-Denver compressors.

From experience these contractors know the dollar-saving advantages of standardizing on Caterpillar equipment. Through this wise standardization, their operators and mechanics become familiar with one make of equipment. There is no need to carry a stock of parts. Many parts on Cat Engines are interchangeable—and service from your well-stocked Caterpillar Dealer is prompt.

Why not have your Caterpillar Dealer demonstrate the equipment that will do your job quicker and cheaper? Discover for yourself the reasons why the machines you see on the toughest jobs are always Caterpillar yellow.

THREE CATERPILLAR UNITS work together on the auxiliary dam. Widening and raising the fill are a DW20 pulling a 50-ton tamper, a DW20 pulling an offset disk and a third DW20 spreading fill for the job.



A CAT NO. 12 MOTOR GRADER finishes the bottom of a canal while D13000 Diesels power Gardner-Denver 500 compressors on top of bank. Graders also maintained haul roads.

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G-E communication provides complete equipment control . . . radically improves customer service. For information on how to apply the plus benefits of G-E 2-way radio in your company activities, call the CAS* man at a local G-E office today or write: *General Electric Co., Section 2273-16, Electronics Park, Syracuse, N. Y.*

*Communications Advisory Service

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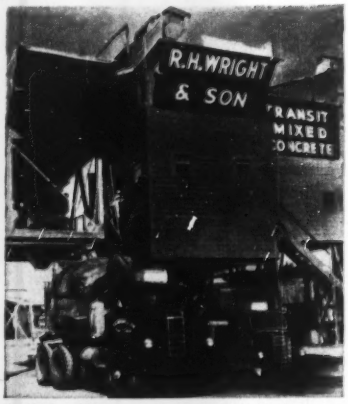

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GENERAL ELECTRIC

Authority tested

Friendly case to test S. F. agency's right to the use of eminent domain

A move to test a city agency's right to the use of eminent domain to clear a site for public housing redevelopment was instigated June 30 by San Francisco's Redevelopment Agency in a petition filed with the California Supreme Court.

• **Friendly case**—The friendly case, designed to test the constitutionality of the state Community Redevelopment Act, will attempt to force Agency Chairman J. Joseph Hayes to sign certain financial contracts with the federal government.

The contracts involve a loan of $22 million in federal funds for redevelopment of a 28-block site in the Western Addition Area. Also called for is a loan of $5.4 million to redevelop a 325-acre plot in Diamond Heights.

• **Legality in question**—Upholding the legality of the California measure will mean upholding the agency's right to use of eminent domain, if necessary, to acquire blighted lands.

Agency attorneys have advised the test before proceeding with the land acquisition program, since an injunction in the middle of the program could sidetrack the redevelopment indefinitely.

• **Board waits**—The redevelopment act, passed in 1945 and amended several times, has not been previously tested in the courts. Final engineering plans of the two areas, the Diamond Heights Area scheduled for completion in July and the less complicated Western Addition slightly later, must be approved by the Board of Supervisors, which is expected to hold back its sanction until the court ruling is handed down.

Following acquisition, planned by Hayes for 1954, the agency, with the cooperation of the S. F. Housing Authority, will help relocate families living in the areas, then clear the land and prepare it for sale or lease to private developers or individuals.

• **Private handling ok**—A June 30 ruling by San Francisco City Attorney allows the agency to work either through private firms or the city's Real Estate Dept. in handling the land sales.

Builders will work with the agency in development of institutional, commercial, and both single and multiple-

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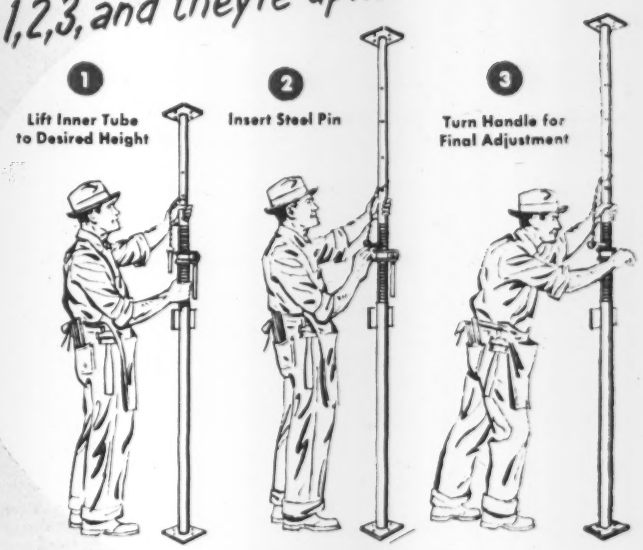

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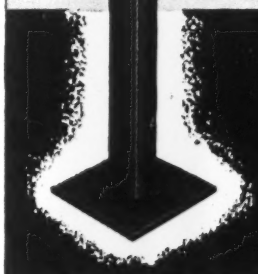

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It insures BETTER CEMENT and CONCRETE by practical pre-testing!

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dwelling housing areas conforming to modern standards. The City and County of San Francisco is expected to pay ¼ share of the cost of redevelopment through the installation of sewers, and the construction of streets and schools.

• **958 units**—The proposed low-rent housing projects in the two areas will have a designed capacity for 958 units, and bids on the first 129 structures are scheduled for call early in 1954.

Municipal briefs . . .

• **Virginia loan**—The HHFA announced allocation of a $1.49-million loan to the redevelopment authority in Bristol, Va., for use in the "Sullins St." project. Over 16 acres of a residential blighted area will be cleared and improved with a primarily commercial redevelopment by private interests.

• **Delaware parking**—Governor J. C. Boggs has signed into Delaware law a bill to broaden the powers of the municipal parking authorities to permit them to lease space in off-street parking facilities for gasoline and automobile accessories sales and for other purposes.

• **Seattle parking**—Construction will begin this summer in Seattle on the first 2,400-car unit of a $3-million parking garage which later will be expanded to accommodate 4,000 cars daily.

• **Alaska power**—Little Petersburg, Alaska, (pop. 1,607) has approved a $1-million bond issue for new hydroelectric facilities. Completion is expected in late 1954.

• **Denver office building**—Work has started on Denver's new 22-story office building by the George A. Fuller Construction Co. Cost is $15 million.

• **Utility improvements**—Albuquerque, N. M., needs $1.7 million for water system improvements and $1.3 million for sewer system betterments, according to City Manager Edmund Engel.

• **Franchise rescinded**—The newly elected Dallas City Council revoked the franchise granted by its predecessor last April to the Sanger Bros. Department Store for construction of an over-the-street parking structure (ENR June 18, p. 49). The body gave as its reason for the action that the overhead proposal was a grant of special privilege that could not be granted to everyone.

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The Insley Manufacturing Corp. of Indianapolis has been manufacturing construction equipment since 1907. The Insley Line includes excavators and cranes, 5 to 30 ton capacity—rubber or crawler mounted—gasoline, diesel or electric powered. There's an Insley working near you.

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MEN AND JOBS

New broom

Spencer assigned to reshape Reclamation's Region 2

A tough job faces Clyde H. Spencer, the man who supervised the building of the Hungry Horse Dam for the Bureau of Reclamation.

He has been assigned the task of carrying out the new Administration's plans to reorganize the bureau's Region 2 office located in Sacramento, Calif.

Spencer steps into the shoes of Richard L. Boke, controversial figure in bureau-developed water and power projects in California. Boke resigned as regional director one day before the reorganization plans were announced from Interior Secretary Douglas McKay's office.

During recent years under the regime of Reclamation Commissioner Michael Straus, who went out when the Republicans came in, and Boke, the Bureau office in Sacramento has been charged with being a "propaganda agency." California congressmen also complained the staff was "top heavy" and question the economy of the "Sacramento office" operations. From some quarters complaints were made that Boke should not have been in the job because he is not an engineer.

• **Clean slate**—To give Spencer a clean slate to start, the Region 2 office was abolished as such and the California Project Office set up instead. Spencer's title is Supervising Engineer.

"In his administration of the California projects under his jurisdiction," Assistant Interior Secretary Fred G. Aandahl said, "He will have the unqualified support of the Secretary, his assistants and the Bureau of Reclamation."

Some of the changes proposed include the abolishment of the bureau's power branch, elimination of district offices in cities in California's Central Valley, and discontinuance of Sacramento River water rights studies.

When Spencer took over, the bureau personnel for the operation of the Central Valley, Orland, Cachuma, Solano and Klamath projects totaled 1,877. This is some 360 less than the number when a Washington cutback order was issued some weeks ago.

• **Orderly cutback**—Spencer said he

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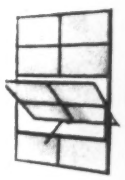

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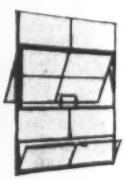

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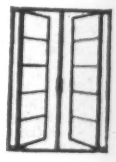
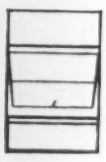
Fenestra Intermediate Steel Windows for hospitals, schools, hotels, etc.



Casement



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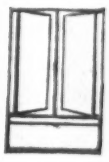

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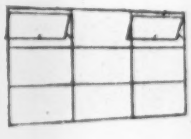

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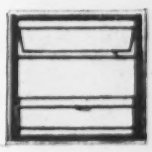

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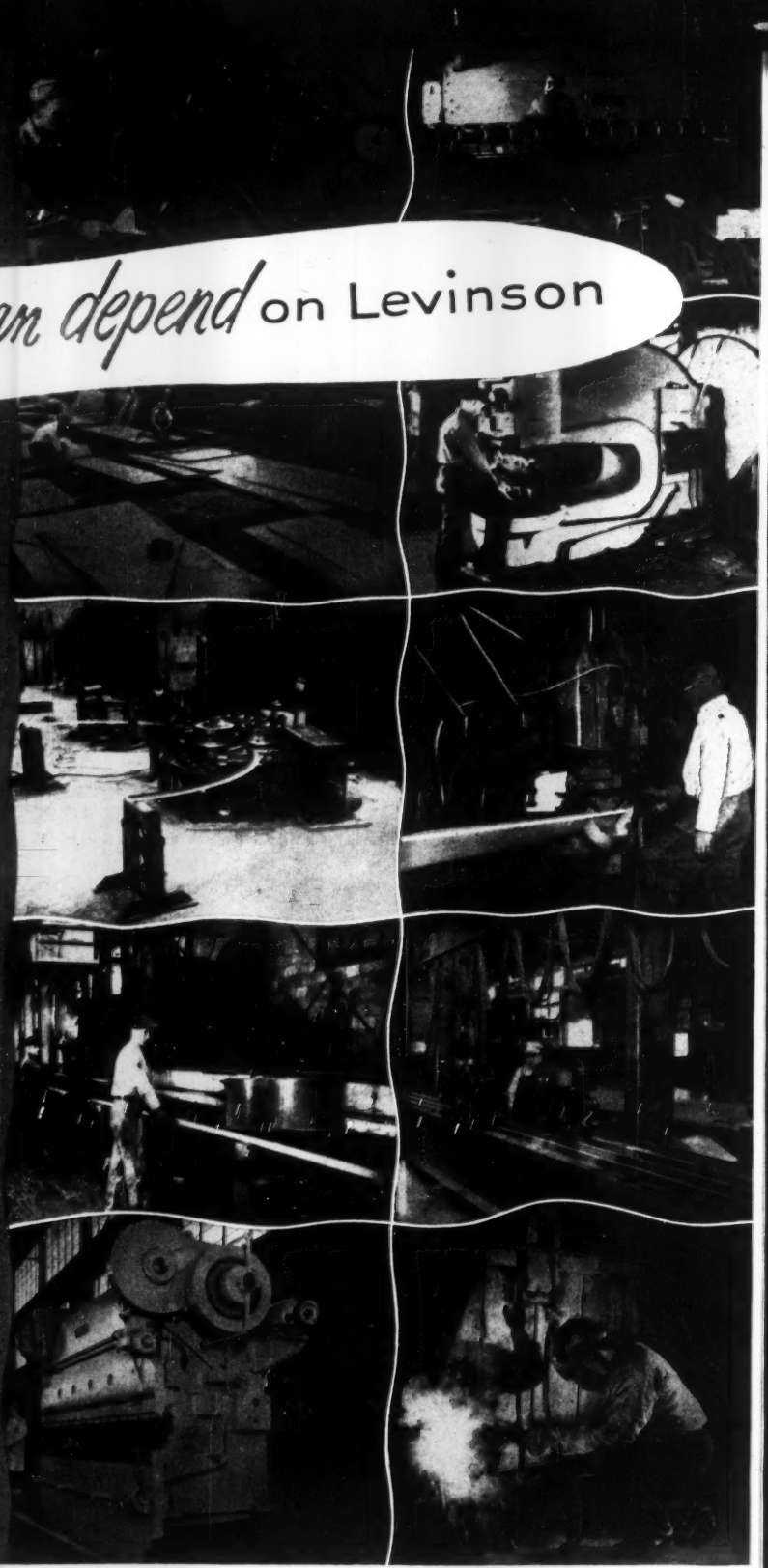

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Fabricators of Steel for Industry

plans to approach the reorganization in an orderly fashion."

"I'm no magician," he added. I have no idea of changing things overnight but I'm going to get a job done as speedily as possible. But I also intend to get along with people."

"The plan is for an orderly reorganization of the CVP and other bureau operations in California to fit the present administration's policy. . . I was told repeatedly the bureau has been in too much promotion activity.

"I want a full opportunity to make my own appraisal of what changes should be made. I'm not ready to set any figure at all on possible cuts in personnel. In any centralization move, of course, you are going to lose a certain number of employes."

In announcing the appointment of Spencer, Assistant Secretary Aandahl said it was an illustration of the "policy under this administration of promoting career employes of experience and demonstrated ability."

The 34 years of experience Spencer has had in a succession of important construction jobs on reclamation projects was climaxed by his supervising completion of Hungry Horse Dam in Western Montana on schedule and below the estimated cost. In 1948 the estimated cost of the Hungry Horse Project was $108 million. Even with rising costs it was completed in five years for $102 million.

After a few days in Sacramento adjusting himself to his new job, Spencer returned to Hungry Horse to clean up some final details there. He planned to be back in Sacramento by July 20 to tackle his new job in earnest.

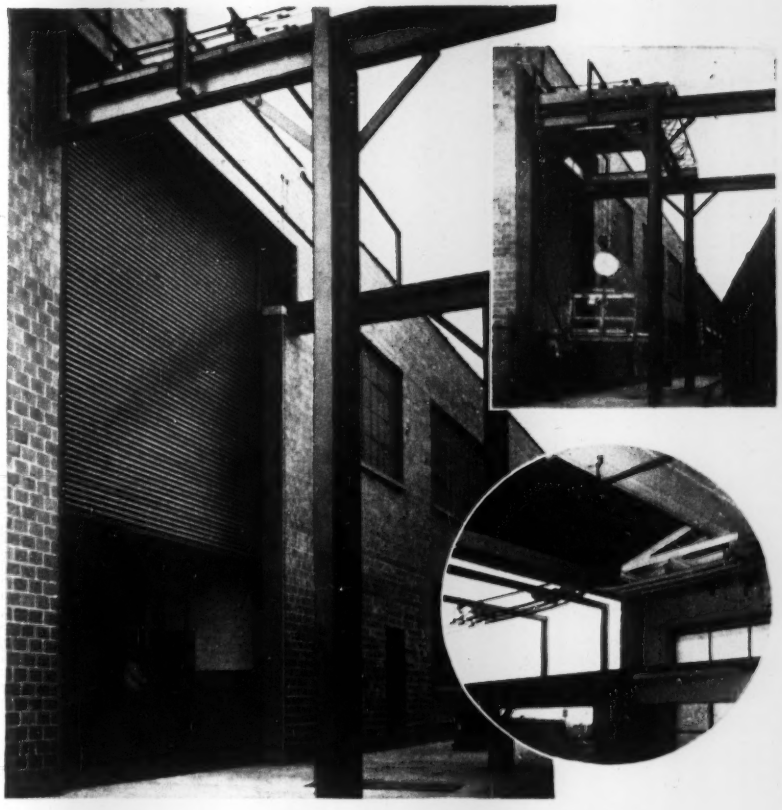
He would be the first to agree with the statement of one bureau worker.

"He's on the spot. Whatever action he takes, he'll be damned." But Spencer knows what his bosses want and he is going to try to put their program into effect.

Caterpillar reorganizes to meet expansion

In order to handle postwar expansion, Caterpillar Tractor Co. has reorganized its administrative setup. The company has established a General Offices group and a Peoria plant organization, both operating in the Peoria plant space. Object of the reorganization: to allow each plant to specialize in manufacture of its assigned Caterpillar products.

The shift removes from the Peoria manufacturing operation those functions which are related to sales and general administration. So Caterpillar



BIG CRANE OPENING
shows advantages *all* doorways gain with
KINNEAR Steel Rolling Doors

It takes more than just "a lot of door" to fill the bill in this big crane opening at the factory and general office building of White Castle System, Inc., Columbus, Ohio.

The door must operate efficiently, close effectively, cut space loss to the bone, and stand up under years of frequent use. Kinnear Steel Rolling Doors score high on all these points.

At the touch of a push button, a Kinnear Motor Operator raises the 450-square-foot door into remarkably small space above the opening. Movable steel jamb sections at the top of the opening pivot upward automatically, clearing trolley area above crane tracks. A special "bridging" arrangement permits a gap in the trolley lines supplying electric power to the crane.

Advantages Kinnear Steel Rolling Doors bring to all service openings are also realized in special situations like this—the protection, fire-safety and durability of all-steel construction . . . space-saving upward action . . . complete jamb-to-jamb, floor-to-lintel clearance of the opening . . . jamb-anchored security against wind or storm damage *whether opened, closed, or in action* . . . ideal for motor operation . . . neat appearance at all times, and many others!

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Saving Ways in Doorways

has now assigned its general sales, export sales, engineering, merchandise, research, treasury, advertising, community relations, and service departments to the General Offices group.

General staff personnel have also been detached from departments which remain in the Peoria plant organization, including: manufacturing, parts, purchasing, employee and labor relations, education and training, and accounting.

The shift transfers about 2,200 people to the General Offices group, leaving about 23,800 in the Peoria plant organization. C. A. Woodley, general factory manager at Peoria, heads the Peoria plant. A number of other promotions have been made as a result of the splitting up of some departments.

Careers . . .

• **Appointed**—**Warren C. Drummond** has become vice-president in charge of engineering for Pioneer Service & Engineering Co., Chicago. **E. D. Uhlendorf,** who has been senior vice-president in charge of engineering, becomes vice-president and consultant . . . Col. **Nelson Leclair, Jr.** has been assigned as district engineer for the Corps of Engineers at Rock Island, Ill. . . . **Tadius J. Gut,** formerly on active Navy duty with the Bureau of Yards & Docks, has become vice-president and general manager of Texas Stressed Concrete Corp., Austin.

• **Local government appointments**—**Harry Manson,** chairman of the New Hampshire Water Pollution Commission, has been elected chairman of the New England Interstate Water Pollution Control Commission.

• **Retired**—**Morton O. Withey,** dean of the College of Engineering of the University of Wisconsin . . . Rear Admiral **Cushing Phillips,** CEC USN, district civil engineer of the 12th Naval District. **Edwin A. Schmitt,** head engineer in the Washington (D. C.) District office, Corps of Engineers. . . **Arthur H. Pettigrew,** right-of-way engineer for the Virginia Highway Department, after 45 years.

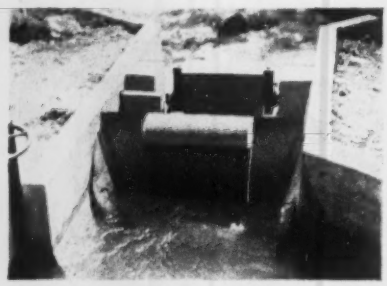
• **Honored**—**Walter T. Wells,** board chairman of Lane-Wells Co., Los Angeles, received the Marston Medal for achievement in engineering from Iowa State College.

Water managers

These two ladies, as far as they know, are two-thirds of all the women hydraulic engineers in the U. S. They are Irene E. Miller (left) and Margaret S. Petersen. They have just gone to work for the Corps of Engineers' Missouri River Division at Omaha after receiving masters' degrees in hydraulics from the University of Iowa. They'll spend most of their time managing water from mainstem dams upstream. Both women started as draftsmen for Army Engineers, later took civil engineering degrees, and after some practical experience with hydraulics work, went on to take advanced degrees.

Parshall Measuring Flumes

Ideal for sewage and water treatment plants. Accurately measures water in open ditches and canals. Settles water disputes. Water velocity will not affect accuracy. Easy to read. Self-cleaning. Built for long life of corrosion-resistant galvanized steel. Approved by State Engineers.



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Gentlemen: Please send me without obligation pictures and data on water control equipment.

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There is nothing to equal the constant, low-cost, top-capacity production of the 848 plant that provides 80 to 140 tons per hour of the finest bituminous mix.

Its portability means less moving time. Its separate components mean less set-up time. Its automatic, interlocked operation assures accuracy and means less loss due to the human element.

Its simplicity of operation and quality construction mean less down time. Its unique simple sampling means less interrupted time.

Its adaptability to all types of mix, including stabilized mixes, means more profitable production.

See your B-G Distributor for complete information on the high capacity 848 Bituminous Plant.

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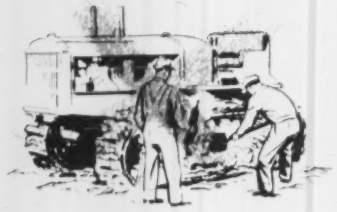
Advance design features make Allis-Chalmers Tractors performance leaders

It takes truly modern equipment to keep pace with today's stepped-up demands — and do it at an operating cost which insures fair and consistent profits. The line of Allis-Chalmers crawler tractors has been designed and built completely new since the war, with the kind of advanced engineering that delivers big-capacity performance at a minimum of maintenance expense.

This forward progress is a continuing program. Additional improvements are constantly being incorporated into the HD-5, HD-9, HD-15 and HD-20 tractors. If you are in the market or just interested, see your Allis-Chalmers dealer for all the inside facts that have proved so popular with owners as well as operators and mechanics.



Daily Lubrication

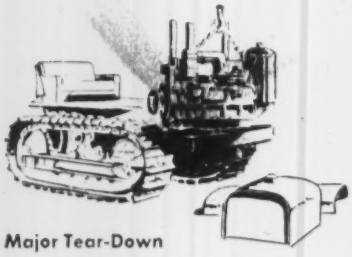
1000-hour Lubrication

On all Allis-Chalmers tractors, you can operate six months on a 40-hour week basis with just one lubrication of truck wheels, front idlers and support rollers. Designed with positive seals and tapered roller bearings, these units are protected from dust, loose sand, soft ground, mud or water. You not only gain working time, but save labor and lubricant costs as well. And there's no costly damage from greasing neglect.

Ordinary Steering Clutches

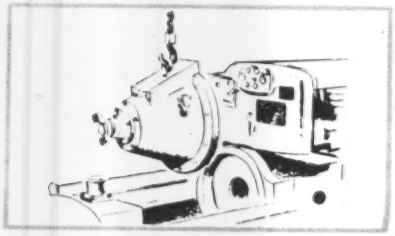
Hydraulic Steering and Self-Energizing Brakes

Allis-Chalmers HD-15 and HD-20 tractors are equipped with finger-tip hydraulic booster steering — operator exerts only 3 to 5 lb. pressure on the controls. As a result he gets small tractor maneuverability from these 27,850 and 41,000-lb. crawlers and can concentrate on his work. All four models are equipped with self-energizing brakes. These require less pedal pressure and take hold with a firm, uniform grip for accurate control.



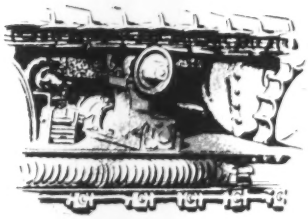
Major Tear-Down

Unit Servicing

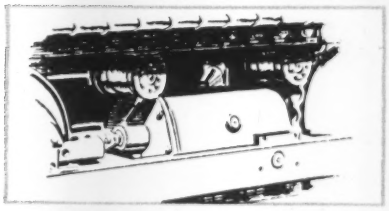


No need to remove transmission or engine, radiator, grille, etc., when servicing or removing an Allis-Chalmers master clutch. The unit assembly principle also applies to final drive gear, transmission, steering clutches, engine and truck frame. As a result, hours of costly service and down time are saved because of Allis-Chalmers advanced design.

Oil Enclosed Track Release Mechanism

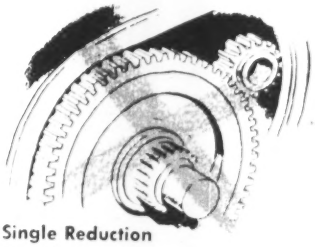


Open or Partly Shielded
Track Release Mechanism

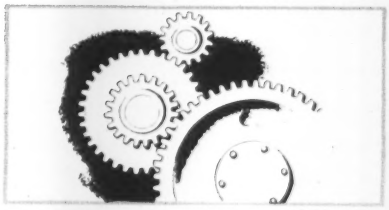


Operating in oil and *sealed* against dirt and moisture, the Allis-Chalmers track release mechanism seals out mud, ice and debris. Because it's completely sealed, the release mechanism is in working condition at all times — providing positive protection when obstacles jam into the tracks.

Double Reduction Final Drive

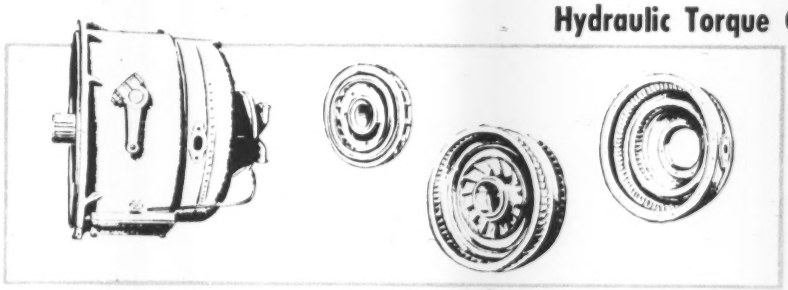


Single Reduction
Final Drive



With smaller gears and shorter shafts, double reduction final drives provide better bearing and gear alignment. The "live" axle permits smaller, more serviceable seals. Equally important, double reduction drive provides for smooth, clean bottom construction and the extra ground clearance so necessary on rough terrain.

Hydraulic Torque Converter Drive



The Allis-Chalmers HD-20 is the only crawler tractor in the industry where torque converter is standard equipment and part of the tractor's basic design. With torque converter there is greater pay load capacity because this unit automatically balances travel speed to the load — no idle horsepower, no worry about engine stalling. And with most shifting eliminated, there's far less operator fatigue.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

NEW!

Josam

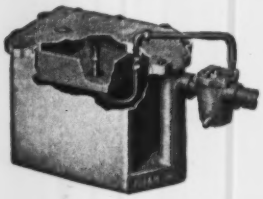
Series "JH"

GREASE INTERCEPTOR

*Automatically** *Discharges*

the intercepted grease

* at the turn of a valve



Here is the grease interceptor the industry has long awaited—a grease interceptor that AUTOMATICALLY discharges the grease at the turn of a valve eliminating the inconvenience of removing the cover of the interceptor and cleaning out the grease by hand.

In the new Josam Series "JH" interceptor with a specially designed "low pressure" or "partial vacuum" chamber, the grease continues to collect in the low pressure chamber from which it can be drawn off at any time, without removing the cover, simply by turning the handle of the draw-off valve at outlet end of the interceptor to the "draw-off" position.

After the stored grease is drawn off, the valve is turned to "on" position and the interceptor is back in operation for grease interception.

Available in a wide range of sizes. Send coupon today for complete information.

Josam Manufacturing Co.
Dept. En. Michigan City, Indiana

Please send complete information on Series "JH" Grease Interceptor.

Name .....

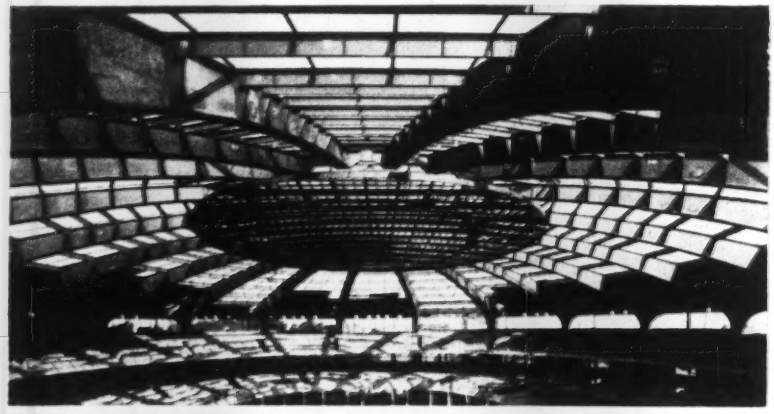
Firm .....

Address .....

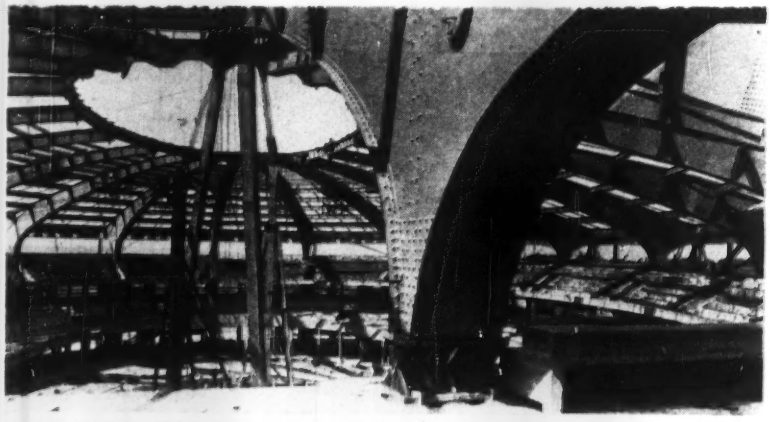
City ..... Zone .....

State .....

INTERNATIONAL



STEEL CANTILEVERS, 98 ft long, form roof of covered stadium. Suspended elliptical grid at center of dome will form an acoustical baffle.

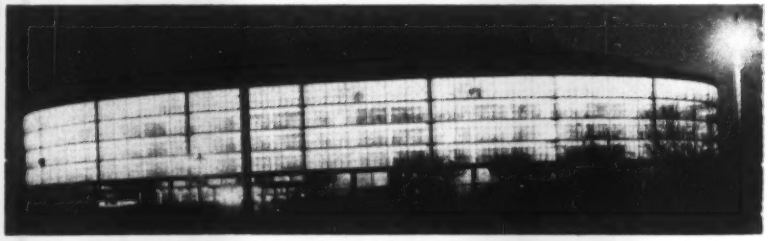


ROOF CANTILEVERS rest on pinned bases. A short outer arm of the cantilever extending to the outside wall of the stadium is anchored with tensioned steel rods to the foundation. Tiers of seats, elliptical in plan, are made of reinforced concrete.

Stadium roof spans 270 ft for full view from bleachers

A cantilevered roof with an unobstructed span of 270 ft makes possible a full view of the oval floor from each of 20,000 seats in a new stadium in Dortmund, Germany. Overall dimensions of the glass-walled elliptical structure are 320 ft by 386 ft. The roof, of precast concrete slabs is supported by double-armed steel cantilevers resting on a pinned base at the topmast tier of reinforced concrete seats.

The inner arms of the steel cantilevers reach 98 ft over the stadium



ELLIPTICAL STADIUM has glass walls and precast concrete slab roof deck.

THE ENGINEER'S REPORT

DATA

LUBRICANT RPM Multi-Service Gear Lub

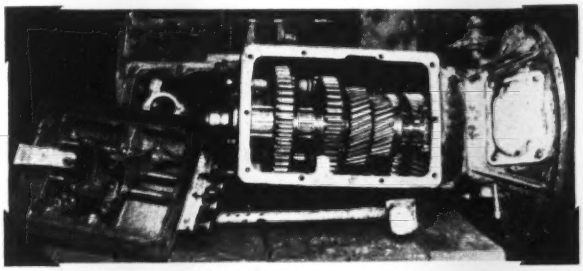
UNIT Truck-crane transmission

OPERATION General contracting—Highway, canal building, etc.

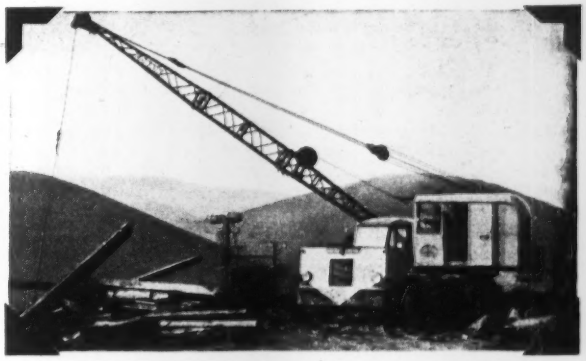
CONDITIONS Always overloaded

FIRM Parish Bros., Benicia Calif.

Overloaded gears still good after 5 years service!



THIS 5-SPEED TRANSMISSION, lubricated with RPM Multi-Service Gear Lubricant, has just completed five years of work in a crane owned by Parish Brothers, Benicia, Calif. Note excellent condition of gears. Although overloaded most of the time, they show very little wear. None were replaced, and the transmission was put back in service. "We have never lost any type of drive gear, because of lubrication, that was protected with RPM Multi-Service Gear Lubricant," says Gene Wagner, Master Mechanic.



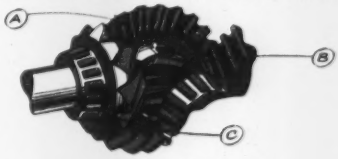
MORE THAN 75 PIECES OF EQUIPMENT are operated by Parish Brothers. All transmissions, differentials and other gear trains are lubricated with RPM Multi-Service Gear Lubricant.

REMARKS: RPM Multi-Service Gear Lubricant gives extra protection and increases the life of many types of gears, and is especially recommended for the extreme conditions in hypoids. It comes in several grades to meet different operating conditions.

RPM

TRADEMARK "RPM" REG. U.S. PAT. OFF.

How RPM Multi-Service Gear Lubricant prevents wear in severe conditions



A. Contains a special compound that reacts chemically with metal to form a protective lubricating coating...resists rubbing action of hypoid gear teeth.

B. Withstands extreme temperatures and pressures...highly oxidation resistant. Keeps gears and bearings cool.

C. Inhibitors resist rusting, stop foaming in cases. Lubricates integral bearings and other parts. Will not separate.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

14-in. U·S·S H-Pile

Sets depth record before stabilizing under 87-ton bearing when peculiar ground conditions are encountered on bridge foundation site.

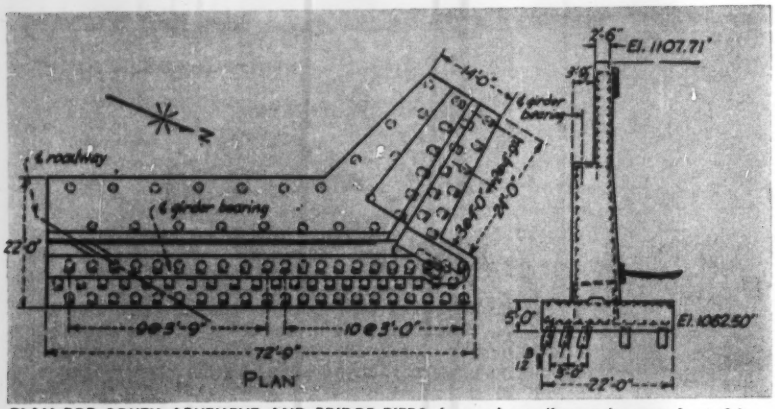
THE long pile is one of 199 closely spaced 14-inch, 102-lb. U·S·S Steel H-Piles in the south abutment of a five-span bridge on a highway relocation project near Meadville, Pa.

While pre-construction borings indicated a wide variety of ground conditions, as revealed in the data from two adjacent borings shown at the right, they gave little warning of what was encountered when actual driving began.

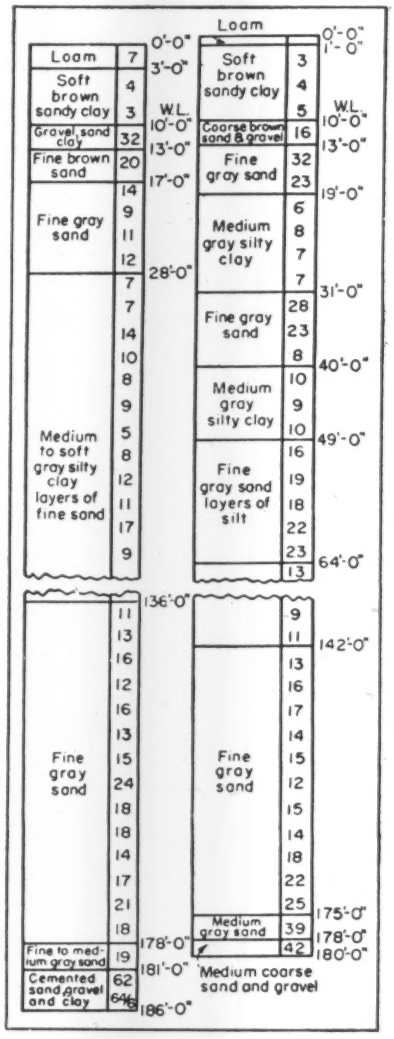
Differences of as much as 100 ft. in the depth of piles next to each other were obtained. The shortest H-pile in the closely spaced foundation area (see blueprint below) is 114 ft. The nearest in depth to the 304-ft. pile is 246 ft. long. Pile sections are 56 ft. long and were driven by a single-acting steam hammer with 26,000 ft. lb. energy per blow. Three diamond splice plates were pre-welded to lower ends of second and successive sections. The section was then set on the already driven pile and the splice completed.

The use of 4246 tons of U·S·S Steel H-Piles on this project is further proof of their ability to provide a secure means of supporting foundations in unstable materials at great depth. They are readily handled in the field by ordinary equipment, are easy to splice, eliminate jetting and withstand rough handling.

For more detailed information about the lasting safety and economy of U·S·S Steel Bearing Piles for every type of foundation job, contact our nearest office.



PLAN FOR SOUTH ABUTMENT AND BRIDGE PIERS shows close pile spacing as adopted by engineers of the Pennsylvania Department of Highways in order to obtain the increased bearing value needed to hold new embankment 35 ft. high.



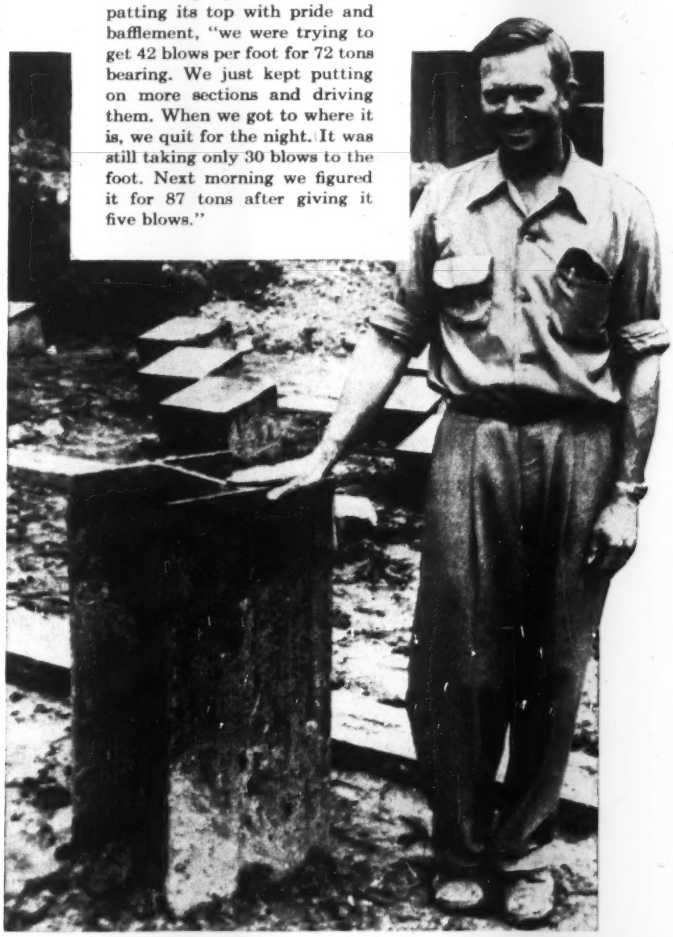
UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

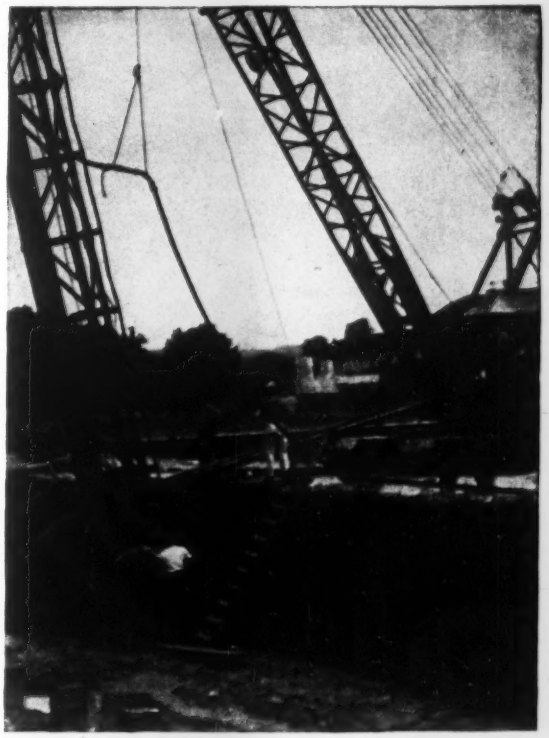
U·S·S Steel H-Bearing Piles

UNITED STATES STEEL

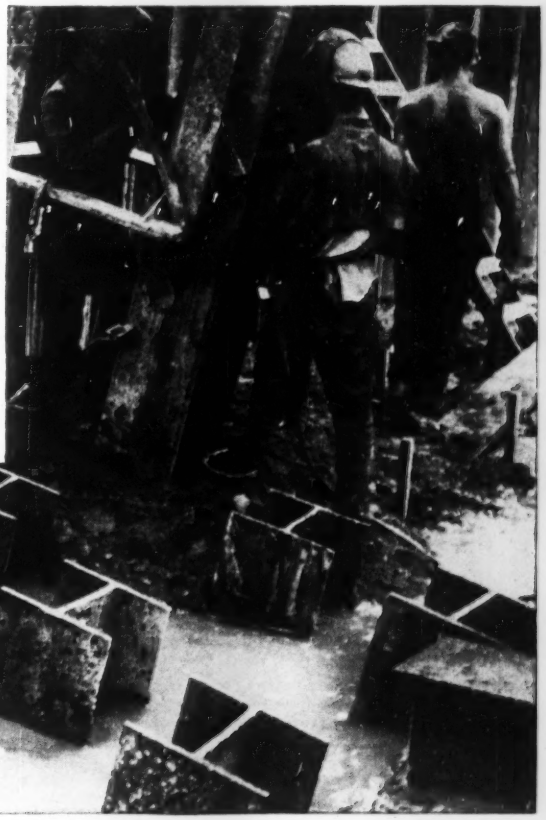
driven 304.3 ft.

"ON THIS 304-FT. pile," says S. A. Meyer, Superintendent for the contractor, S. J. Groves & Sons Company of Minneapolis, patting its top with pride and bafflement, "we were trying to get 42 blows per foot for 72 tons bearing. We just kept putting on more sections and driving them. When we got to where it is, we quit for the night. It was still taking only 30 blows to the foot. Next morning we figured it for 87 tons after giving it five blows."





PILES WERE DRIVEN by a single-acting steam hammer with 26,000 ft. lb. energy per blow. The hammer rides on 90-ft. rigid leads on a crawler crane with 80-ft. boom.



QUICK SPLICE of 65-ft. section was made by welders in 15 minutes. Three diamond splice plates were pre-welded to lower ends of second and successive sections. The section was then set on the already-driven pile and welders went to work.

In hand hoists—

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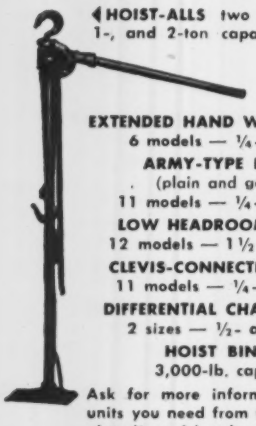
OVER 80 SIZES AND MODELS TO FILL ALL YOUR NEEDS

SPUR-GEAR HOISTS
22 models — ¼- to 25-ton

SAFETY-PULL RATCHET LEVER HOISTS
10 roller-chain models — 1,500- to 30,000-lb.
2 coil-chain models — 1,500- and 3,000-lb.

CHALLENGER LIGHTWEIGHT ALL-STEEL SPUR-GEAR HOISTS
3 models — ½-, 1-, and 2-ton

MIGHTY-MIDGET PULLERS
2 sizes—500- and 1,000-lb.



HOIST-ALLS two sizes — 1-, and 2-ton capacities

also:

EXTENDED HAND WHEEL HOISTS
6 models — ¼- to 3-ton
ARMY-TYPE HOISTS
(plain and geared)
11 models — ¼- to 10-ton
LOW HEADROOM HOISTS
12 models — 1½- to 24-ton
CLEVIS-CONNECTED HOISTS
11 models — ¼- to 10-ton
DIFFERENTIAL CHAIN HOISTS
2 sizes — ½- and 1-ton
HOIST BINDER
3,000-lb. capacity

Ask for more information on the units you need from the most complete line of hand-operated hoists. Write Dept. EN7.

COFFING HOIST COMPANY
DANVILLE, ILLINOIS

and support at their ends a suspended elliptical framework which incorporates the main lighting installation and forms an acoustical baffle over the center of the enclosed arena. The outer arms of the double cantilevers extend outwards 26 ft from their pinned bases to the exterior wall of the stadium. Anchored steel rods are fastened to the extremity of this short outer arm to balance the double cantilever. These tensioned anchor rods run down the outside glass wall of the stadium to concrete anchor piers.

Long-span honeycomb ceiling . . . .

takes heavy reinforcing

Built as a floor for a second story automobile show room, a honeycomb slab in Bogota, Colombia, is unusual for its span of 67 ft in either direction and the depth of its cells. One of the requirements in the slab design was that it must also serve as a ceiling for an automobile show room on the first floor. The necessity for an unobstructed area on the first floor predicated a long span slab design that could support automobiles on the second floor showroom.

To achieve the long span the designers used a cell 31½ in. deep with cell walls 5¾ in. wide on 3-ft, 3-in. centers. The reinforcing in the bottom of the cell longitudinal walls is made up of 7 1-inch bars and in the transverse cell walls of 6 1-inch bars. The design called for a uniform dead and live loading on the honeycomb slab of 26.5 psf over the total area.

In the lower photograph, at the left and in the background, are wooden boxes that were placed between rows of reinforcing to form cells when concrete was placed.

EDUCATION

Job-study programs

Construction's practical side gets emphasis at ASEE annual convention

Training engineers specifically for the construction industry—a plan that has already made considerable headway at several colleges—was a topic of discusion at the 61st annual meeting of the American Society for Engineering Education at Gainesville, Fla.

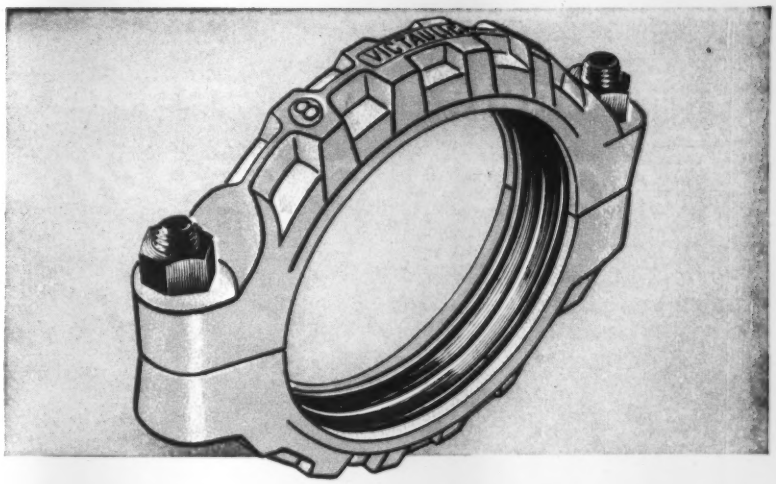
Architectural and civil engineering educators at the meeting declared that there is a great need for some degree of correlation (not standardization) among schools that profess to specialize in training engineers for the construction industry.

Several general trends are evident, the educators said, and seem to have an increasing impact on planning curricula for engineers who expect to enter the construction industry. One of them is a growing interest on the part of local and regional units of the Associated General Contractors in sponsoring the work at certain schools. Examples are the Massachusetts Institute of Technology (which over a period of years has had a student organization affiliated informally with the contractors in Boston); North Carolina State College; and Texas A.&M. College.

It was suggested that a joint committee on relations with the construction industry should be formed—one which might parallel the extensive activities for the ASEE Committee on Relations with Industry. This latter group has been concerned mainly in cooperating with manufacturing industries. Such a new committee, it was stated, might result in increased and improved relations with outstanding organizations directly engaged in construction work.

At North Carolina State College, the five-year program for construction engineers bears little resemblance to the civil engineering course, according to Prof. Ralph E. Fadum. The course has been worked out with cooperation and support of the local AGC branch and the Carolina Road Builders Association. Two years are spent in practical work—such as construction planning, organization and preparation of bids. The students figure on current jobs, attend bid openings and compare their results with actual bids submitted. One semester is spent in

(Continued on page 89)



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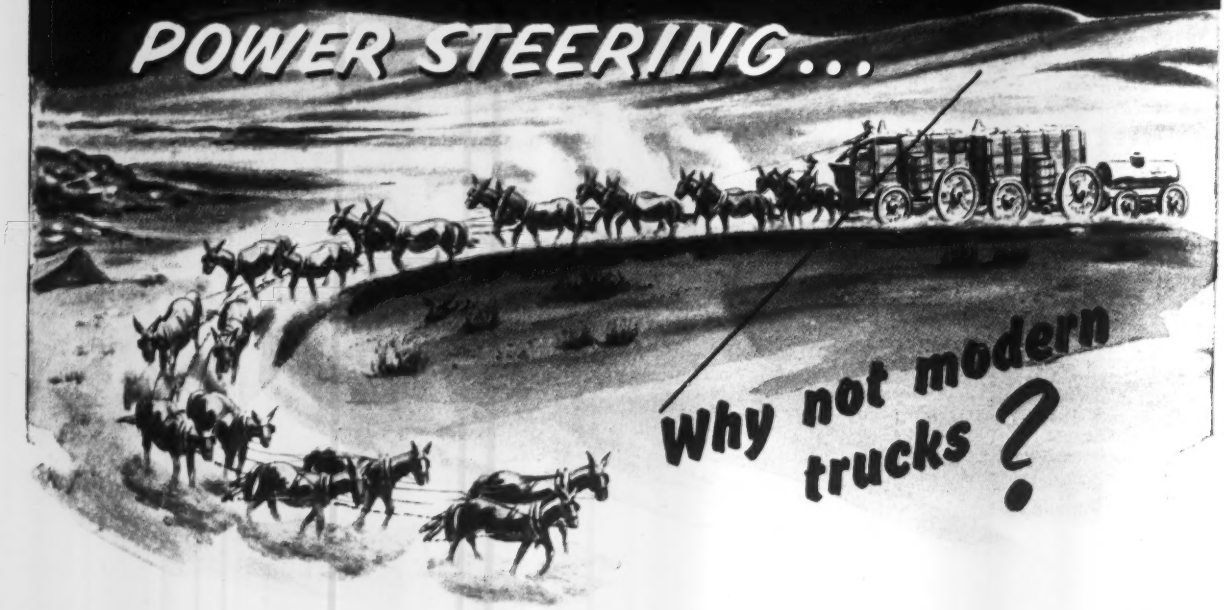
20-mule team wagons had POWER STEERING...



As the primitive 20-mule team wagons loaded with borax creaked their way 167 miles out of the bitter wastes and murderous heat of Death Valley, the drivers had the benefit of power steering. The mules furnished the power for steering as well as propulsion of the two 4-ton wagons. The driver only guided the mules.

Today's truck transport is generally superior in every way but one. Too often the far heavier manual steering load is on the arm, shoulder and back muscles of the driver. This tiring work slows him down, reduces his efficiency, makes him "accident-prone."

Vickers Hydraulic Power Steering makes the heaviest vehicle almost effortless to steer . . . even under the brutal conditions of nearly roadless deserts like Death Valley. A light finger touch is enough. Ruts, soft shoulders, obstructions, flat tires, off road conditions cannot cause wheel spin or loss of control. Steering no longer fatigues the driver—he remains fresh, efficient, safe.

For further information on Vickers Hydraulic Power Steering, ask for Bulletin M-5100.

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VICKERS hydraulic
POWER STEERING
Is Effortless, Positive and Shockless

employment on a construction project. The course leads to a bachelor of science degree in construction.

A work-study program at the University of Detroit was described by Prof. Robert Blakeslee. Alternating three months of classroom studies with three months of field work on construction jobs, the students are trained for the operating rather than civil engineering phases.

The Georgia Institute of Technology works closely with the Georgia State Highway Department. In this program, students are given summer jobs by the department.

One drawback in the efforts of educators to train more construction engineers is the lack of satisfactory textbooks on the operating phases of construction. Another hindrance is the question of accreditation; some educators said they are not concerned about this aspect of the situation, provided the construction industry can be furnished with college men specifically trained as operating constructors. The need for such men is indicated by the demand for graduates from such courses.

General Motors issues journal for colleges

The first issue of GM ENGINEERING JOURNAL—a magazine presenting General Motors' technical developments to educators and college engineering students—has just been released, according to Paul Garrett, GM vice president in charge of public relations.

This new publication will appear bi-monthly during the school year and once during mid-summer months. It gives up-to-date information on research, production and product engineering developments throughout GM divisions and various technical staffs. Articles, primarily beamed toward engineering students at junior, senior and graduate levels, are designed to assist professors in supplementing classroom presentations.

Handling the project is the Educational Relations Section of the Public Relations Department, headed by Kenneth A. Meade. Editor is Arvid F. Jouppi, former technical journal editor for Sperry Gyroscope Co.

Ten scholarships awarded by AISC

Ten $1,000 scholarships in civil and architectural engineering have been awarded by the American Institute of Steel Construction in its fourth annual scholarship program.

(Continued on page 92)

WESLEY & COMPANY, INC.
ENGINEERS AND BUILDERS
285 HUNNICUTT STREET, N. W.
ATLANTA, GEORGIA

Masonite Corporation
111 W. Washington St.
Chicago 2, Ill.

Gentlemen: Re: Atlantic Coast Line--Champion Terminal Warehouses, Atlanta

The $5,000,000 Champion Terminal Warehouse development was planned to rehabilitate certain areas within the "Golden Heart" of the City of Atlanta. Wesley & Company is now erecting Buildings Nos. 9 and 10 of the 21 in this project.

To provide the finest possible building with the lowest possible cost, the monolithic reinforced concrete structure was selected. After the inspection of various government jobs, and a trial use of Masonite Concrete Form Presdwood for the roof slab, it was decided to use Masonite Presdwood as a liner, with the "screen" side to the concrete for wall construction.

The use of Presdwood as the slab form liner (slick side to concrete) and as the vertical form liner (screen side to concrete) has given us excellent results, both from the standpoint of costs and finished appearance.

Yours very truly,
WESLEY & COMPANY, INC.
Terrell C. Wesley, Jr.
President

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Cuts Costs—Two Ways!

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With smooth side to the concrete, this all-wood hardboard leaves a smooth, flat surface ready for painting with a minimum of hand-rubbing.

With screen side to concrete, the resulting texture helps make a better "soap", cuts rubbing time in half, or better, for a smooth, finished surface.

Large 4′ x 8′ and 4′ x 12′ panels are easy to cut and fit with regular carpenter's tools. Offer these extra advantages:

- Can be used again and again
- Can be curved for arches, columns, etc.
- Insure complete, uniform hydration
- Won't split, splinter or crack
- Fewer joints

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"Best Wire Rope Service..On 33 Draglines"

Tuffy® Draglines

Says Superintendent of a Leading Florida Rock Producing Company*

Dragline drainage ditching jobs, like this one in Michigan, call for extra flexible, extra tough Tuffy Draglines.

Longer Service Life of Tuffy Results in Big Savings On Rock Crushing Jobs

"On our first comparison test, Tuffy Draglines went 26 shifts against 19 shifts for the make we had previously been using. Our second test proved even more conclusive: 19 shifts for Tuffy, 9 shifts for the other make. Now we use Tuffy Drags 100%."

These tests were conducted by a construction company that operates 33 draglines in their plants. By their own tests, they proved that Tuffy's extra flexibility, extra abrasive resistance, and extra toughness helped them cut dragline costs 40%. Discover for yourself how Tuffy Draglines can move more material for longer periods to help you reduce handling costs.

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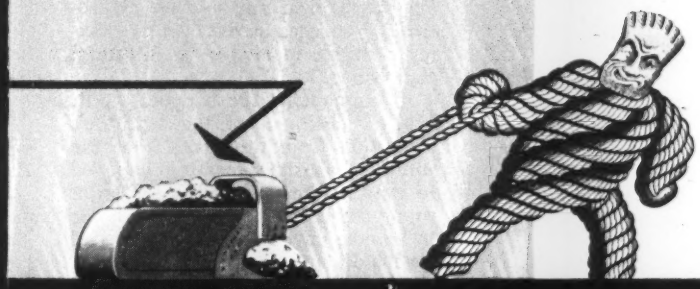
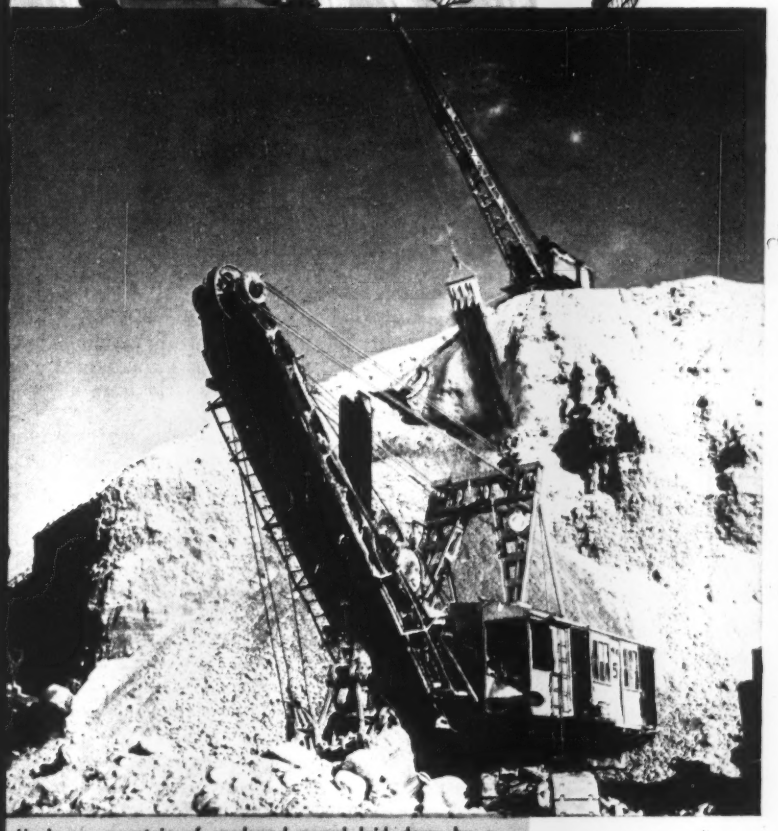
Specialists in Wire Rope and Braided Wire Fabric

Since Switching To





Moving a mountain of sand and gravel laid down by a glacial stream thousands of years ago requires skill *plus* equipment you can count on. You can count on Tuffy Draglines for greater abrasive resistance and reduced handling costs.

Other Specially Designed Tuffy's For Special Uses

Tuffy SCRAPER ROPE

Tuffy is tailored to take • Greater drum crushing abuse • Sharper bends over smaller sheaves • Angle pulls through swivel mounted sheaves. • Crawling on flanges of guide rolls and edges of sheave housing • Multiplied impact shock of load on slack lines.

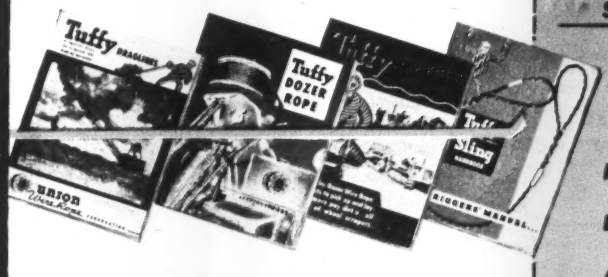
Tuffy DOZER ROPE

No need to throw away 40′ to 50′ of good rope when 10′ or so is crushed or cut. With a reel of Tuffy Dozer Rope, mounted on your dozer, you feed only enough through the wedge socket to replace *only* the damaged part . . . get up to 300% increased service! And, you can make the cut and have your dozer back at work in less than *half* the usual time!

Tuffy SLINGS

9 part machine-braided wire fabric construction fights off knots and kinks, stands up longer than ordinary wire rope. Proof-tested to twice safe working load.

SEND FOR THESE FREE FOLDERS



union Wire Rope **corporation**
Specialists — In Wire Rope and Braided Wire Fabric
2228 Manchester Ave., Kansas City 3, Mo.

☐ Tuffy Dragline ☐ Tuffy Scraper
☐ Tuffy Dozer ☐ Tuffy Slings

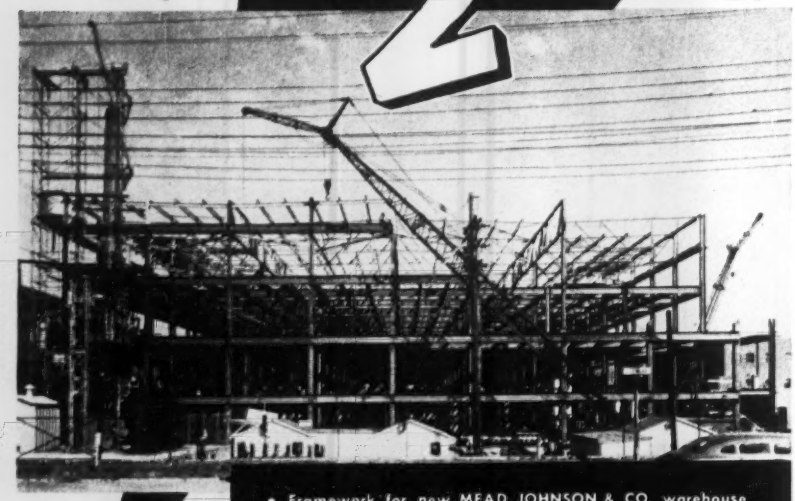
Firm Name_____

By_____ Title_____

Address_____ City_____ State_____

WHERE CONCENTRATION

PAYS 2 WAYS



- Framework for new MEAD JOHNSON & CO. warehouse at Evansville, Indiana.
- Designed and constructed by THE AUSTIN CO., Cleveland, Ohio.
- ALL STRUCTURAL STEEL SUPPLIED BY INTERNATIONAL STEEL COMPANY.

• Formerly, Mead Johnson pharmaceutical and food products were distributed through many widely scattered branch warehouses. Now, nation-wide distribution is streamlined through three strategically located depots—including the recently completed building shown above—with resultant important economies in both handling time and costs.

Concentration proved more economical, too, in the construction of this newest Mead Johnson facility. Selection of International Steel as the *one* source for all structural steel assured the combined advantages of *one* responsibility . . . *one* standard of quality . . . PLUS an A-1 record for accuracy and promptness in meeting all requirements. And few firms indeed can equal International's record for solving the most difficult steel fabrication problems—*most economically.* Our all-inclusive service is always at *your* service. Write today—tell us your needs.

INTERNATIONAL STEEL COMPANY

INTERNATIONAL SERVICE

1950 EDGAR STREET
EVANSVILLE 7, INDIANA

EDUCATION

Winners in the nationwide contest were selected from a group of 84 high school seniors nominated by 53 steel fabrication companies. Scholarships may be used at any one of 131 accredited colleges in the country offering a degree in civil or architectural engineering.

In announcing the winners, T. R. Mullen, chairman of the Institute's Education Committee, said that the annual scholarship program is designed to assist in the technical education of young students who later may choose to become engineers in the fabricated steel industry.

The jury of educators which made the final selection include: Wesley J. Hennessy, assistant dean, Columbia University; Nichol H. Memory, director of admissions, Stevens Institute of Technology; Robert W. Van Houten, president, Newark College of Engineering.

Increasing water yield

Twelve years research by the U. S. Forest Service indicates that periodic harvesting and thinning of young trees could produce a permanent increase of 25% in water yield from a watershed.

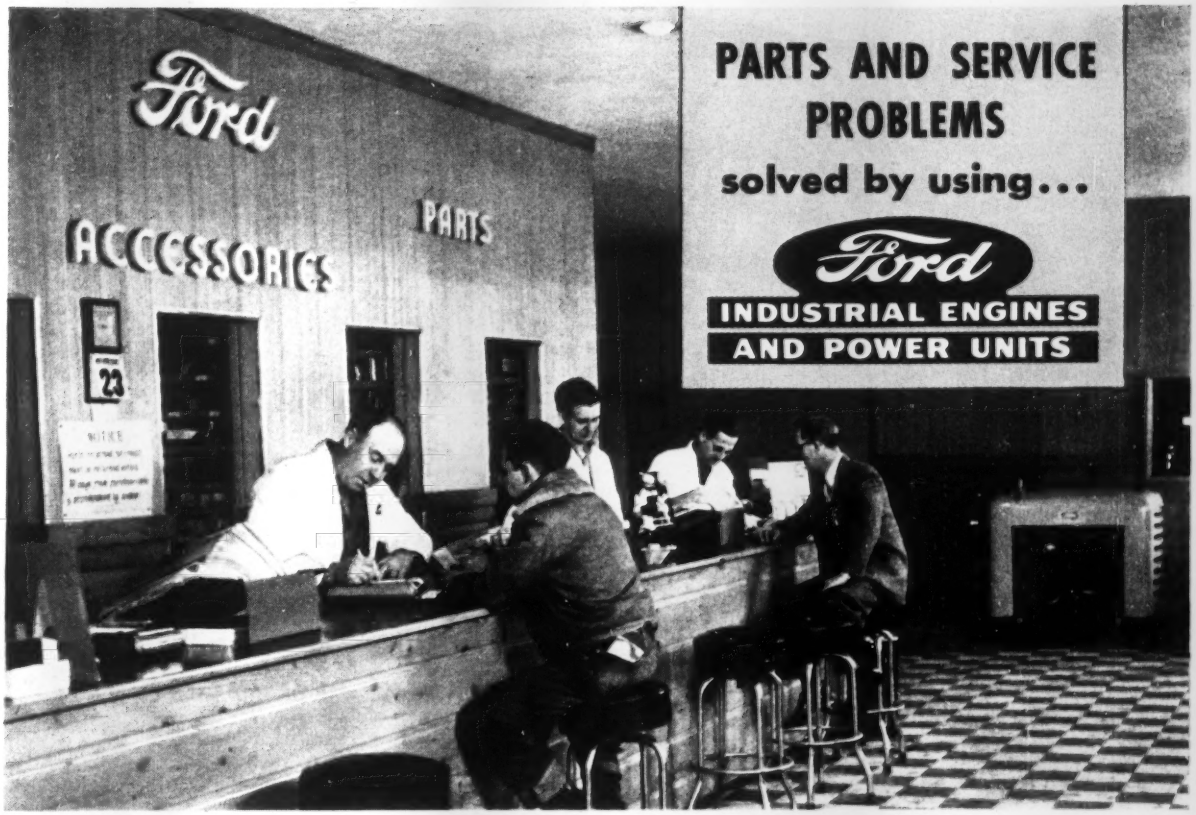
These new data on water production by timber cutting were disclosed in the annual report of the Forest Service's Rocky Mountain forest and range experiment station at Fort Collins, Colo.

Experiments reveal that as much as 30% more water can be produced from a given area when dense, virgin stands of lodgepole pine and Englemann spruce are thinned by harvesting mature trees. The report explains that the gain is most evident right after big trees have been cut but diminishes again as trees regrow and the forest thickens.

Thinning provides open spaces into which winter snows can pack to greater depth. The deeper the snow pack, the better soil moisture is maintained and the greater becomes the slow, useful summer runoff of water.

The Denver Water Board, looking ahead to a possible water shortage in its city by 1967, is cooperating with the Forest Service experiments.

Denver, on the eastern side of the Rockies, now obtains about one-third of its water supply by tunnel from the western slope. It has an 81,280-acre watershed on the upper reaches of the Fraser and Williams Fork rivers—and is now seeking rights to additional water in the Blue River.



FORD DEALERS EVERYWHERE

a quick source when needed!

Users of industrial powered machinery have come to understand why both operators and original equipment manufacturers today *specify* Ford Engines. Those who have suffered serious losses through excessive "downtime" on their jobs appreciate the advantages of quick availability of Ford replacement parts.

Located in virtually every city, town and village, more than 6,400 Ford Dealers carry substantial stocks of Genuine Ford Parts which can be obtained over the counter or ordered by phone and installed with a minimum of delay. These parts are available at low cost, along with the services of Ford dealers' trained mechanics whenever necessary.

6 Great Engines

Designed and built for industrial use, Ford Heavy Duty Engines are now offered in six series: One 4-cylinder, two 6-cylinder and three V-8's, ranging from 134 to 317 cu. in. displacement. All are completely tested and ready to run when delivered to you. Write for descriptive literature on these engines and also the Ford MULTA-TORQUE Converter.

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

FORD HEAVY DUTY INDUSTRIAL ENGINES and Power Units are not only priced right, but are famous for their high-precision standards and rugged construction. Within their range, there's a series ideally suited to the needs of your equipment. Why not look into it right now?

MAIL THIS COUPON . . . TODAY!

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY
15050 Woodward Ave., Highland Park 3, Mich.

We are interested in Industrial Power for:

_____
(State your application)

Send us 1953 literature on Ford Industrial Engines checked below:

☐ "134" 4-cyl. ☐ "215" 6-cyl. ☐ "239" V-8 ☐ "254" 6-cyl.
☐ "279" V-8 ☐ "317" V-8 ☐ "MULTA-TORQUE" Converter

Firm Name _____
(Please print)

Street _____

City _____ Zone ____ State _____ A

ONE-PIECE GEAR CASE

10 Reasons Why UNIT is a BETTER MACHINE

DISC CLUTCHES

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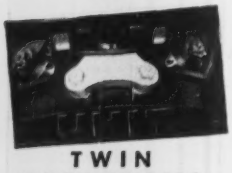
FULL VISION CAB

UNIT is the ONLY machine on the market with all these time-tested, outstanding features . . . and every one is backed by more than a quarter century of engineering skill and craftsmanship.

Compare UNIT, part for part, feature for feature, with any other crane or shovel, and you will realize why UNIT leads the field in excavating and material handling equipment.

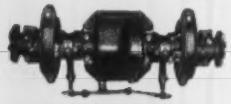
Why not investigate what UNIT can do for you? Get the complete story — write today for free booklet "10 Reasons Why UNIT Is A Better Machine."

INVOLUTE SPLINES



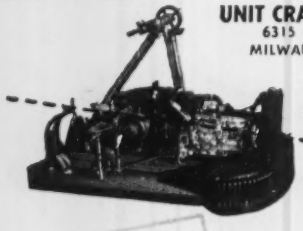
TWIN HOOK-ROLLERS

HEAT TREATING



AUTOMATIC TRACTION BRAKES

UNIT CRANE & SHOVEL CORP.
6315 W. BURNHAM STREET
MILWAUKEE 14, WIS., U. S. A.

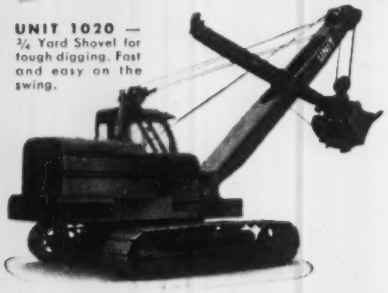


STRAIGHT IN LINE MOUNTING

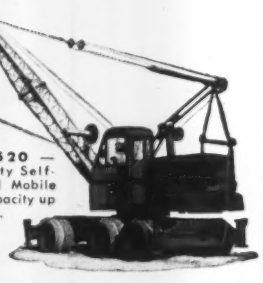
WORM DRIVE

Available in Crawler and Mobile Models . . . ½ and ¾ yard Excavators . . . Cranes up to 20 tons lifting capacities . . . Fully convertible to all attachments.

UNIT 1020 — ¾ Yard Shovel for tough digging. Fast and easy on the swing.



UNIT 1520 — Heavy Duty Self-propelled Mobile Crane. Capacity up to 20 tons.



All Models Convertible to ALL Attachments!

LEGAL

Misrepresentations

"It may be stated generally that where the plans and specifications induce a public contractor reasonably to believe that certain indicated conditions actually exist and may be relied upon in submitting a bid, he is entitled to recover the value of such extra work as was necessitated by the conditions being other than as represented."[1]

(1) Gogo v. Los Angeles County Flood Control Dist., 114 P. 2d 65 and numerous cases cited.

Decisions by the engineer

"The rule is well settled in the federal courts that, where parties to a construction contract provide, as in this case, that the estimates and decisions of an architect or engineer as to questions arising in the execution of the contract shall be final and conclusive, such estimates and decisions have the effect of the award of an arbitrator. In the absence of fraud or such gross mistakes as imply bad faith or failure to exercise an honest judgment, they are conclusive and binding upon the parties."[1]

(1) Corporation of Charles Town v. Ligon, 67 F. 2d 238, 242 and numerous cases there cited.

Contractor's responsibility where specs are at fault

"The claim of the owner rests upon a clause in the contract that the waterproofing shall be water-tight. It is claimed that one of the walls has cracked and is not water-tight. This claim rests upon the language of the contract and specifications, just as does that of the subcontractor. The specifications provide how the walls shall be built and how the waterproofing shall be done, and the subcontractor was required to build them in that manner. If they proved not to be watertight, it was no fault of the subcontractor, provided he complied with the specifications, but was the fault of the designer of the plans for which the owner cannot recover in this action.

"Where a contractor agrees to produce a certain result, he is responsible if the result is not produced; but, where the owner assumes to specify the manner of construction to produce the result, the owner assumes the responsibility if the work does not turn out as expected. If the plans are in-

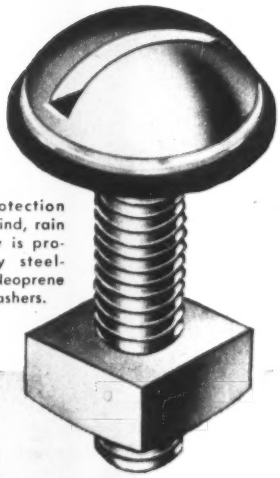
(Continued on page 99)

Another **BUTLER** *construction feature for better steel buildings*

BOLTED CONSTRUCTION

Locks sheets to rigid steel frame

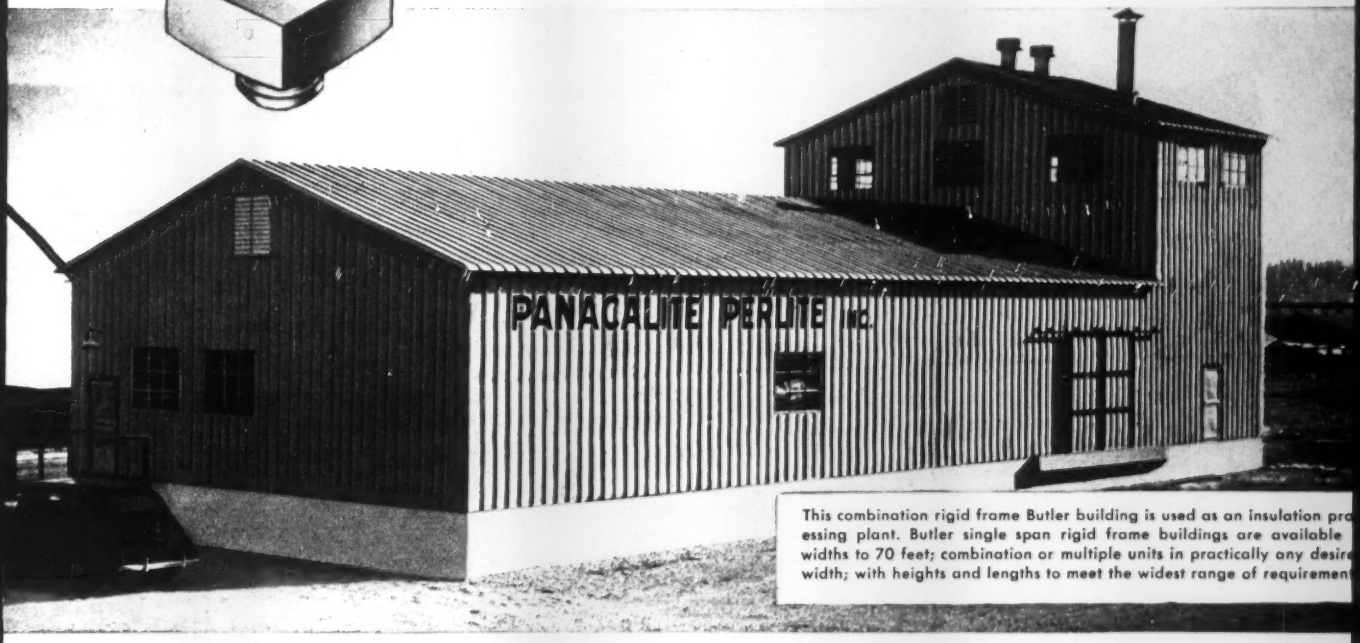
Typhoons and earthquakes have proved the superior protection given to building contents by Butler construction! Galvanized bolts lock specially-corrugated Butler galvanized or aluminum sheets to rigid steel framework. Sheet laps are bolted together for extra rigidity and weather-tightness. Precision-punched and dimensioned bolt holes assure fast, easy, low-cost field erection—and also assure 100 percent re-use of materials for building expansion or removal to a new location.



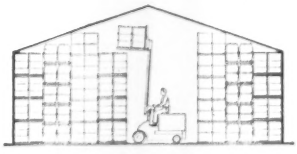
Extra protection against wind, rain and snow is provided by steel-backed Neoprene rubber washers.

Only BUTLER *gives you ALL these advantages:*

- Clear span, rigid frame construction
- Deep-drawn corrugated sheets, galvanized or aluminum
- Bolted construction
- Die-formed one-piece roof ridge
- Weather-sealed windows and base
- Die-formed curved eave sheets
- Sidewall sheets mitred for weathertight fit with eave sheets
- Weathertight stationary ventilators
- Easily insulated
- Complete adaptability to your door and window requirements



This combination rigid frame Butler building is used as an insulation pro essing plant. Butler single span rigid frame buildings are available widths to 70 feet; combination or multiple units in practically any desir width; with heights and lengths to meet the widest range of requirement



STRAIGHT SIDEWALLS

. . . More space per $

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☐ Send name of my nearest Butler dealer.
☐ Send information about Butler Steel Buildings for use as

Name _____

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Address _____

City _____ Zone _____ State _____

WATER Paces Lakeland's Business Growth!

Allis-Chalmers Helps World's

THE "WORLD'S CITRUS CENTER" is being helped by Allis-Chalmers in the race to keep water works ahead of population growth. In ten years, Lakeland's population has increased 70 percent, meters have doubled, and gallonage pumped has nearly tripled!

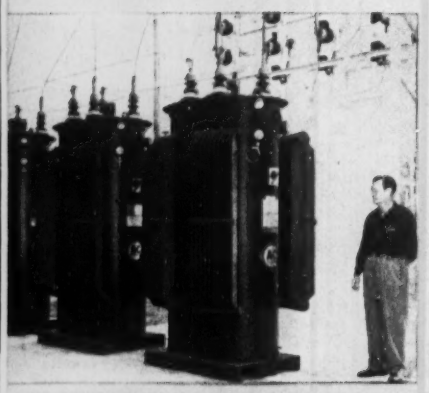
Lakeland is so named because of the 12 lakes within its city limits. It is near the geographical center of Florida, in Polk county . . . producer of a third of all Florida citrus, two thirds of U. S. phosphate, and more cattle than any other county in the state.

Lakeland gets its water — 154,363,500 gallons per month average in 1952 — from 11 deep wells running down to 1201 ft in depth. Storage capacity is 1,778,000 gallons. Following aeration, Allis-Chalmers pumps . . . driven by Allis-Chalmers motors . . . using Allis-Chalmers generated power . . . force the water into the city mains.

Lakeland has learned by experience the wisdom of depending on Allis-Chalmers for a complete range of public works equipment. Some of their A-C equipment has been in operation for over 30 years and maintenance has been "practically nil." A-C equipment at Lakeland ranges from three turbine-generators through transformers, M-G sets, and controls to motors and pumps of many sizes.

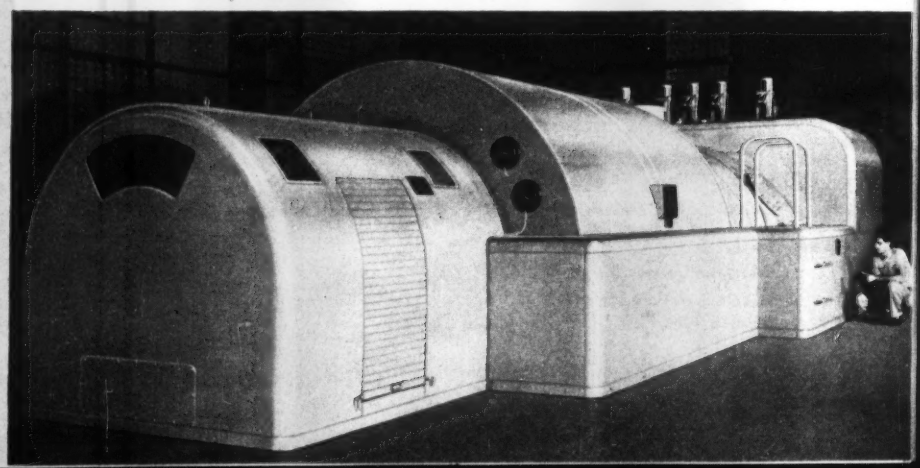
When *your city* plans expansion or modernization, do as Lakeland and other leading cities are doing — take advantage of Allis-Chalmers experience as builder of the world's widest range of public works equipment. Literature on all products available; Public Works Bulletin 25C6607A and Pump Bulletin 08B6146B just off the presses. For your copies, just call your nearest A-C sales office or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

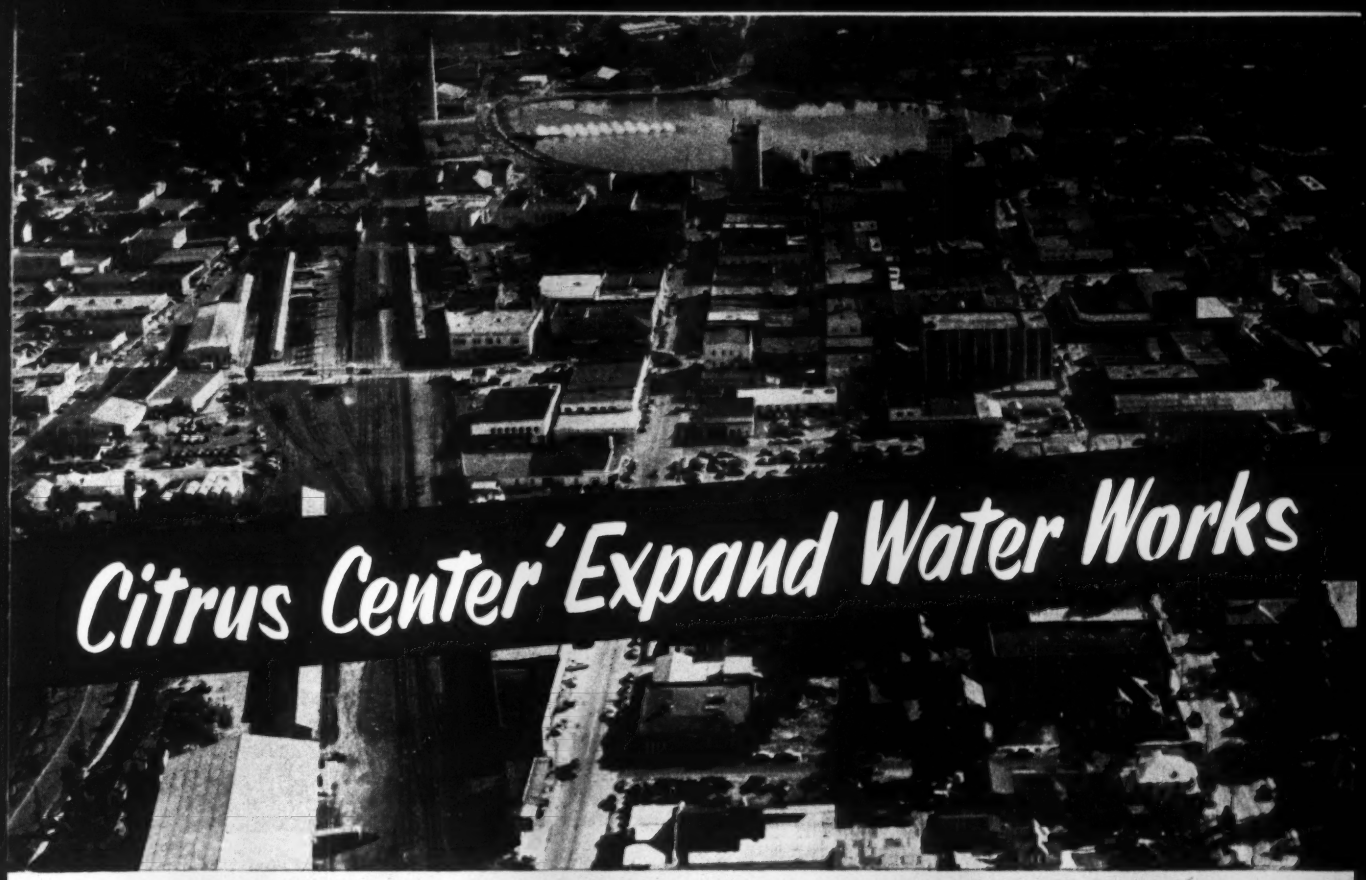
A-4070



POWER TRANSFORMERS were furnished by Allis-Chalmers. Those above are 833 kva, single phase, self-cooled units in Lakeland suburban substation. Other electrical equipment supplied includes controllers for the 150 hp deep well pump motors.

NEW POWER HOUSE features Allis-Chalmers 20,000 kw steam turbine generator unit. In addition to the steam turbine, hydrogen cooled generator, main and pilot exciters, and hydrogen control equipment, A-C also furnished the three 6 x 4 in., 450 gpm, 1150 psi boiler feed pumps.

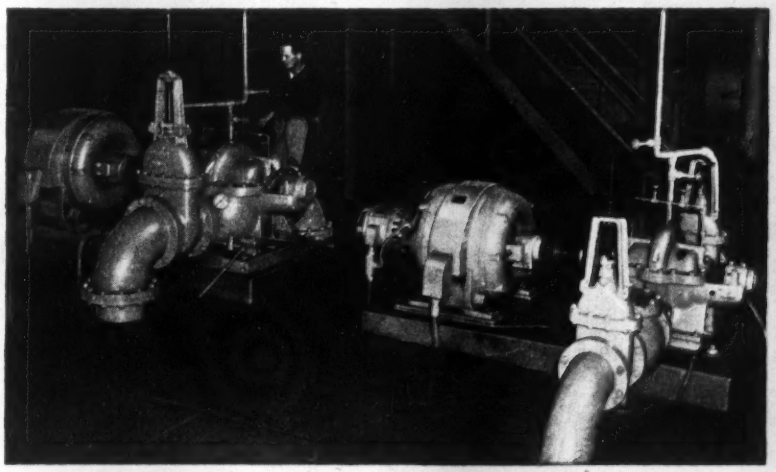


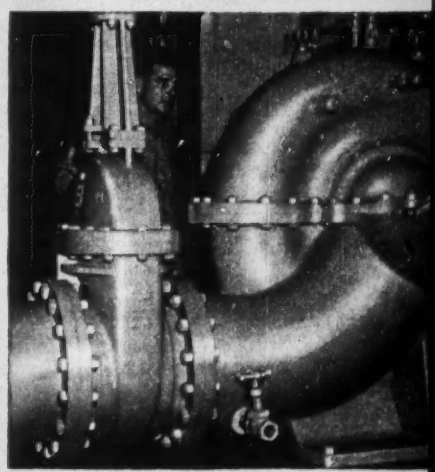


Citrus Center Expand Water Works

LAKELAND FROM THE AIR, looking east. Over 600,000 people live in a 50 mile radius from Lakeland, Fla. Old power house, containing two Allis-Chalmers 5000 kw steam turbine generator units and associated equipment, is on left shore of Lake Mirror in center of above photograph.

CITY MAINS ARE SUPPLIED by Allis-Chalmers pump-motor teams ranging in capacity from 2000 to 4000 gpm each. Typical setup shown below: at left is a 12 x 10 in. pump rated 4000 gpm at 160 ft head, driven at 1800 rpm by 200 hp motor. At right is a 2000 gpm, 8 x 8 in. pump driven by a 100 hp, 1800 rpm synchronous motor.





PUMPS RANGE IN SIZE from 1¼ x 1¼ in. to this 16 in., 6000 gpm, 16 ft head unit furnishing condenser cooling water in old power house. Here Allis-Chalmers supplied two 5000 kw steam turbine generator units, boiler feed and condenser circulating water pumps, and crane motor-generator set.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Builders of the World's Widest Range of Public Works Equipment

FASTENING COSTS CUT AGAIN!

NEW Ramset PLUS-POWER JOBMASTER does heavy-duty work at light-duty cost

A year ago, we introduced the newest development in powder-actuated fastening, the RAMSET JOBMASTER, with important features which have helped make it the most widely used tool in the industry.

NOW, with no sacrifice of these valuable advantages, we announce the new PLUS-POWER JOBMASTER, to bring still more economy and versatility to the high-speed, low-cost RAMSET SYSTEM for fastening into steel and concrete.

SAVE 1/3 POWER LOAD COST...

DO MANY MORE "TOUGH" JOBS...

WITH PLUS-POWER JOBMASTER

You can make substantial savings in many of your heavy-duty fastening jobs with the new PLUS-POWER JOBMASTER, with 3/8" barrel. Using lower price, light-duty loads, this new RAMSET Tool will set most Tru-Set 3/8" heavy-duty studs and drive pins, thus cutting 1/3 off your powder load costs.

Further savings are gained through the use of our new Tru-Set 3/8" Flat Head Drive Pins, which require no discs or disc adaptor, and cost considerably less than comparable heavy-duty pins.

Best of all, you obtain these new economies with the same speed, ease and convenience of the standard JOBMASTER which have made it the outstanding favorite for high-speed, low-cost fastening into steel and concrete.

Ask for demonstration . . .

If you now use a JOBMASTER, let your dealer show you the advantages of a plus-power assembly for your present tool. Or, if you use any other powder-actuated tool, or none at all, see how PLUS-POWER JOBMASTER gives you 2-tools-in-1, to drastically cut costs, reduce work and save time for fastening into steel and concrete. Call your dealer or write us for details.

Ramset Fasteners, INC.

Ramset Division, Olin Industries, Inc.

12117 BEREA ROAD • CLEVELAND 11, OHIO

ANOTHER Olin PRODUCT

sufficient to produce the result desired, the contractor is not responsible if he carries out the plans.

"It is claimed that there were no expansion joints in the walls, and that they were not properly buttressed, pilastered, or supported, and that they therefore sprung, checked, cracked, and leaked. This was a fault of design and not of construction, and the contractor is not liable if the walls proved not to be water-tight. . . .

"An owner under a building contract cannot recover damages for failure to produce a given result where he has specified the manner in which the work shall be built to accomplish that result. . . . Where an owner specifies how foundation walls shall be built and waterproofed, the contractor does not warrant that they shall be water-tight, though the contract represents that they shall be water-tight."[1]

(1) Kuhs v. Flower City Tissue Mills Co., 171 N.Y.S. 688, 104 Misc. 243.

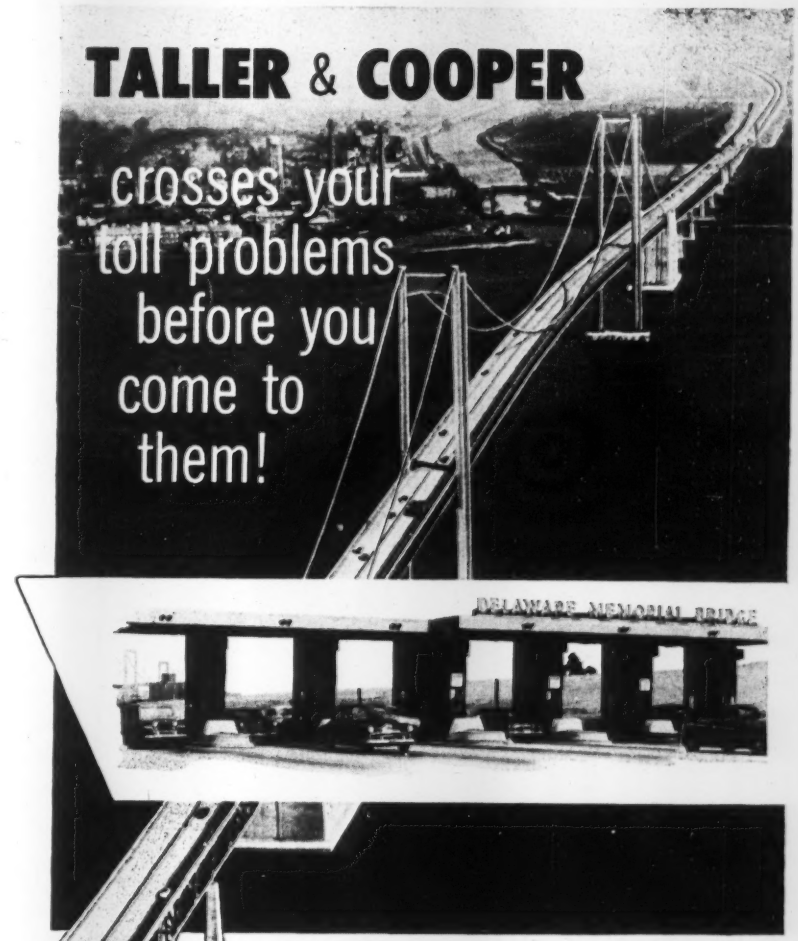
Recovery for extra work

"The ultimate guide in determining whether or not there can be a recovery for the extra cost of doing work under a contract is the contract itself. It is always a question of the intention of the parties, and it is this fact which gives rise to the difficulty of reconciling some of the cases. No two contracts are exactly alike, and a difference in the language may make inapplicable a decision under some other contract. It may be said, however, that if there are positive representations in a contract as to the conditions, character, or nature of the work amounting substantially to a warranty, there may be a recovery based upon such representations. . . .; and this may be true even though the contractor was required to make investigations and satisfy himself upon these matters.

"On the other hand, the representations may be such that it was clearly the intention of the parties that the contractor should rely upon his own investigations and examinations, and in such cases he cannot recover upon the representations. . . . There may be representations and still the contractor will be denied a recovery because his bid was a gross bid for the entire work. . . .

"A recovery may be had where the representations made are fraudulent even though the contractor is required by the contract to make independent investigations. . . ., but by far the greater bulk of the cases upon this

(Continued on page 102)



Taller & Cooper preassembled Toll Booths and Toll Collection Systems at the Delaware Memorial Bridge.

The Delaware Memorial Bridge, sixth longest suspension bridge in the world, gets complete custom planning in the shortest span of time with Taller & Cooper Toll Collection equipment.

And that's exactly why every major facility in America has chosen Taller & Cooper. Because these shop-fabricated Toll Booths and Canopies are up in hours . . . permanently water proof, safe and efficient . . . complete with electrical and heating equipment, controls, racks, drawers, cabinets and furniture. Ready to let traffic roll through and collections roll in!

If you are planning a toll facility, you'll get the finest planning with Taller & Cooper custom designed Toll Collection equipment.

WRITE TODAY for unique design and construction details.

TOLL BOOTHS

TOLL COLLECTION SYSTEMS

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ENGINEERS • MANUFACTURERS

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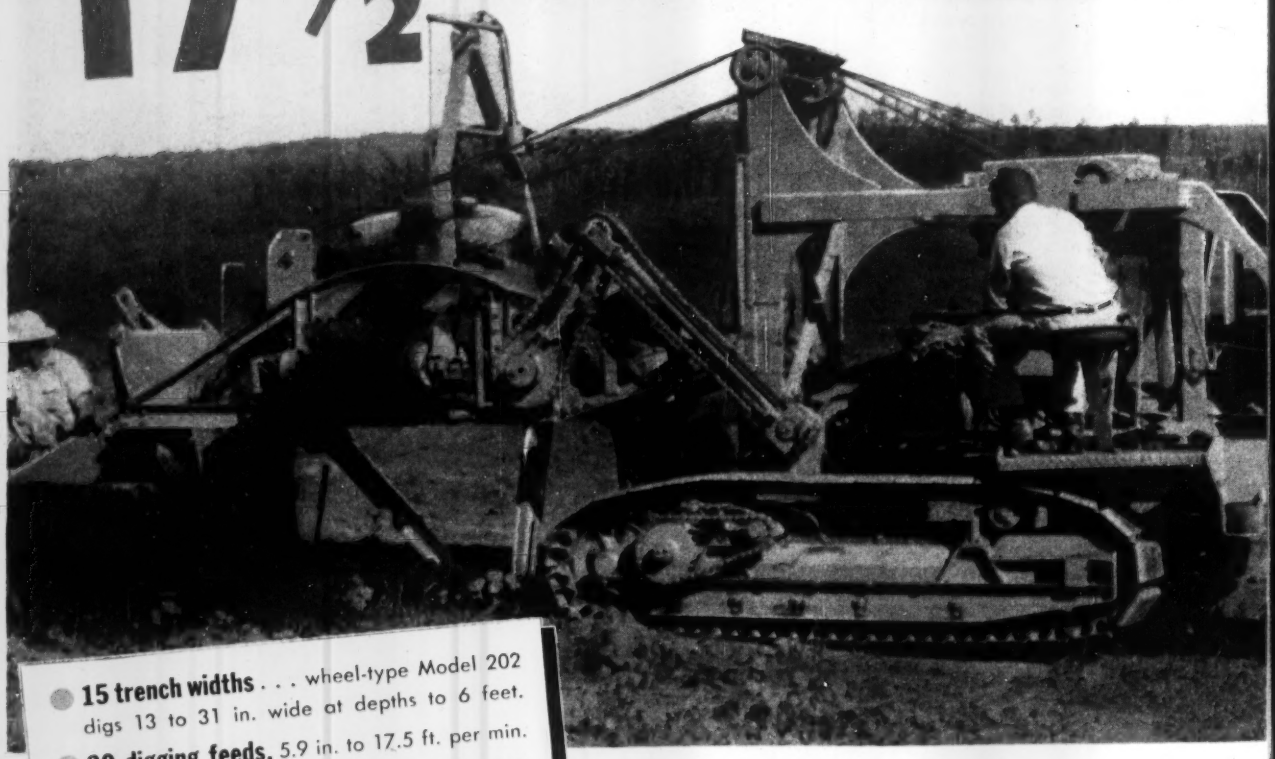
TALLER & COOPER TOLL COLLECTION EQUIPMENT IS USED ON EVERY MAJOR TOLL FACILITY IN THE U. S.

17½ FEET PER MINUTE

13 to 31 in. wide...up to 6 ft. deep



- **15 trench widths** . . . wheel-type Model 202 digs 13 to 31 in. wide at depths to 6 feet.
- **30 digging feeds,** 5.9 in. to 17.5 ft. per min.
- **Enclosed friction clutches** accurately control wheel depth for precision grading.
- **Dual-purpose** friction-type clutch drives digging wheel . . . protects against shock loads.
- **Digging wheel truck-rollers** are all fully equipped with antifriction bearings.
- **Quick-change bucket fronts** have cutting lips, or easy-in, easy-out "Tap-In" teeth.
- **Shiftable, reversible** belt conveyor discharges spoil to either side of machine.
- **Full crawler mounting** . . . 16 or 20-inch treads . . . only 6 or 5 lbs. PSI pressure.

Send to: **PARSONS COMPANY, NEWTON, IOWA** for specifications, price information on 202 Trenchliner.

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COMPANY .....

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☐ Also send details on Pipeline Model 215.

ENR CP247REV

PARSONS wheel-type 202 Trenchliner combines big work capacity with precision grading accuracy. Wide range of digging feeds, widths and depths fits special requirements of municipal and utility trenching . . . farm, airport, highway drain-tile jobs . . . irrigation ditching . . . oil, gas, gasoline transmission lines, etc.

Specified grades are easy to maintain because digging wheel responds instantly to sensitive friction-clutch control. Arched wheel frame, rigidly trussed, and three double-wheeled guide rollers keep digging wheel precision aligned. Hinged crumber sweeps trench bottom clean, ready for pipe. Tile-laying box and chute (optional) saves time, labor on drainage jobs.

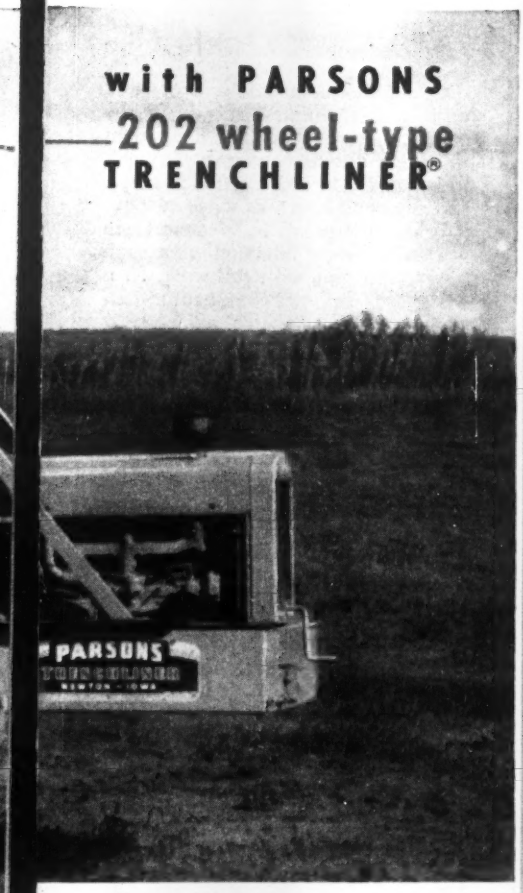
For full details on this big-production 202 Trenchliner, see your Parsons distributor, or write us.

PARSONS COMPANY NEWTON, IOWA

(Koehring Subsidiary)

6 TRENCHLINER models: 2 wheel-types, 3 ladder-types full crawler mounted, and utility-size Trenchmobile® on rubber.

with PARSONS 202 wheel-type TRENCHLINER®



▲ FOR CROSS-COUNTRY TRENCHING

. . . here's another Parsons wheel-type Trenchliner . . . pipeline Model 215. It has 6 digging wheel speeds up to 11.2 r.p.m. . . . choice of square or round-bottom buckets . . . standard tractor-type crawlers with 18" treads, lug-type shoes . . . standard 55 h.p. diesel engine.

10, 14-CU. FT. Kwik-Mix Bituminous Mixers

With Kwik-Mix non-tilting 10 and 14 cu. ft. Bituminous Mixers you get: wide flow-line skip, hinged skip track, pugmill-type mixing, accurate heat control, even bitumen distribution, 6-second end discharge. Both sizes can be used with Tower Loader (shown) for stockpiling or loading trucks. Also available on skids as stationary plants. Other units: concrete; tilt, non-tilt plaster-mortar mixers; and Moto-Bug® (power wheelbarrow).

KWIK-MIX *(Koehring Subsidiary)*
Port Washington, Wis.

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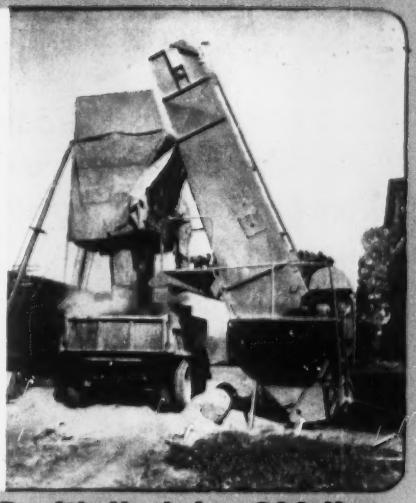
As batch plant, Johnson Elevating Charger has a size 14 1000-lb. cement weigh batcher, hung under a 33-bbl. overhead storage hopper . . . or, to charge dual-batch trucks, two 1000-lb. weigh batchers can be used. It's quickly changed to transfer plant by removing batchers and cone, and bolting a 50-bbl. extension section to upper hopper. Easily moved and erected by dump truck, no crane needed. See your Johnson distributor.

C. S. JOHNSON *(Koehring Subsidiary)*
Champaign, Ill.



DIG 19-¾ FT. DEEP with Koehring 304 Hoe

As a heavy-duty hoe, Koehring ¾-yd. 304 digs 19¾ ft. below crawlers. Dipper arm, pivoted at end of boom, jackknifes to dig vertical backwall . . . close-coupled dipper pulls up tight to boom. Hoe readily converts to shovel, dragline, clamshell, or to 13.9-ton lift crane on crawlers (25 tons on truck or cruiser mounting). Other Koehring heavy-duty sizes: ½ to 2½ yds. dipper capacities . . . and 7¾ to 79½ tons lift capacities.

KOEHRING COMPANY
Milwaukee 16, Wis.

X61

Sun reflecting aluminum sheets will cover this Wolmanized lumber reservoir roof in Pomona, Calif.

Wolmanized lumber, on steel framing, gives lasting protection and insulation to this Orlando, Fla. reservoir.

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From coast to coast Wolmanized pressure-treated lumber protects the precious contents of literally acres of water reservoirs from dirt, evaporation, and small boys with or without swimming suits. Since water's just about the wettest commodity there is, ordinary lumber used in the construction of reservoirs would soften in a matter of months. Highly rot-and-decay-resistant Wolmanized pressure-treated lumber, however, lasts for years. Actual service records show numerous Wolmanized reservoir installations are as good as new after more than 14 years in service. And since Wolmanized pressure-treated lumber is odorless, water supplies aren't chemically-contaminated or made to taste like mothballs.

Wolmanized lumber's resistance to rot is largely due to the fact that Wolman* preservative solutions are *forced* deep into the fibers of the wood by high pressures . . . not just brushed on or soaked in. And besides being odorless, Wolmanized lumber is nonoily, clean and completely paintable.

Wolmanized pressure-treated lumber is distributed nation-wide since Wolman preservative treatment plants are located in all parts of the country. Learn how you can get lasting rot and termite protection for your reservoirs or other wooden structures.

For full information write:

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PRESSURE TREATED
Lumber

subject falls under the head of work or material furnished outside of the contract. A recovery may be had in this line of cases where the work was to be carried to bedrock, for instance, and the contractor was made to carry it below that point. . . .; where there was an erroneous direction of an engineer which required extra work. . . .; where there were unauthorized changes in plans which required extra work. . . .; and generally where the contractor was required to do work which did not come within the scope of the contract. . . ."[1]

(1) Kuhs v. Flower City Tissue Mill Co., 104 Misc. 243, 171 N.Y.S. 688.

Cost-plus contracts

Where a construction contract provided that all work to be done on a "time and material basis", the contractor's compensation is limited to the cost of labor and materials and the contractor cannot charge for overhead or profit, as is customary in cost-plus contracts.[1]

(1) Dougherty v. Iredale, 108 N.E. 2d 754, Court of Appeals of Ohio, April 14, 1952.

Meaning of "working days"

Construction contracts often provide that the work shall be completed within a stipulated number of working days, and provide for the payment of a stipulated amount per day of excess time of performance, as liquidated damages for delayed performance. Disputes have often arisen as to the legal interpretation of the term "working days."

In a recent case,[1] the contract provided that the building was to be completed in 125 "working days" and that in the event the contractor failed substantialy to perform the work within the stipulated time, the owner would be entitled to deduct from the contract price, as liquidated damages for delayed performance, the sum of $25 for each day of such delayed performance. The contract also provided that Sundays and holidays were to be deducted from the excess days of performance in computing the amount to be retained by the owner as liquidated damages for such delayed performance.

The contract did not complete the work in 125 days, excluding Sundays and holidays, and the owner deducted from the contract price the sum of $25 for each day of such delayed performance. The contractor brought the action to recover the sum so withheld.

(*Continued on page 104*)

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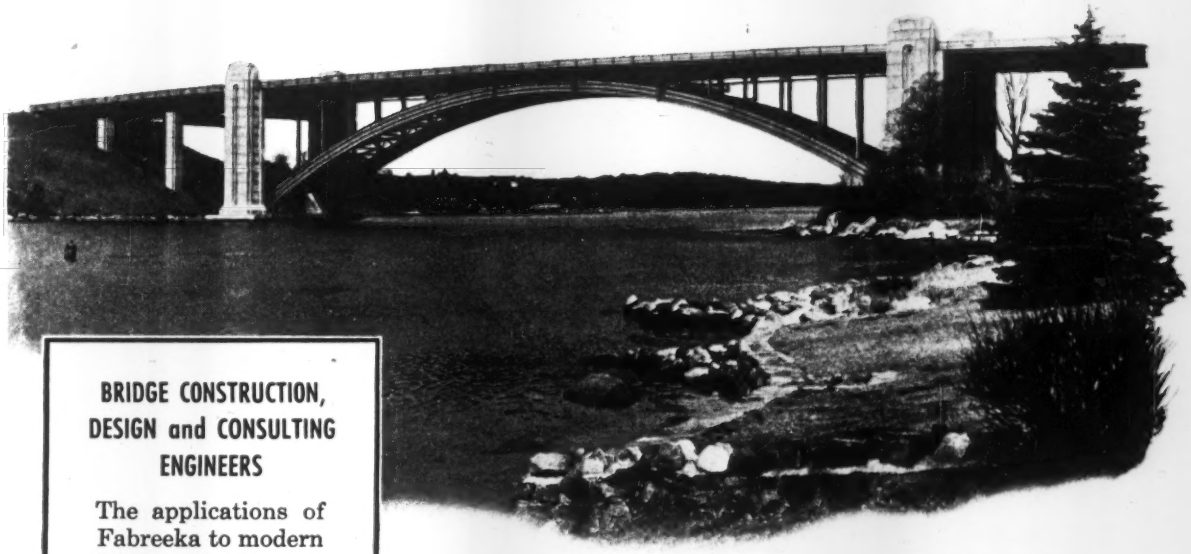
for HIGHWAY BRIDGES



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FABREEKA – proven by over 18 years of successful performance in the absorption of impact shock and vibration in heavy industry – effectively protects concrete foundations, helps to distribute loads evenly, and reduces maintenance.

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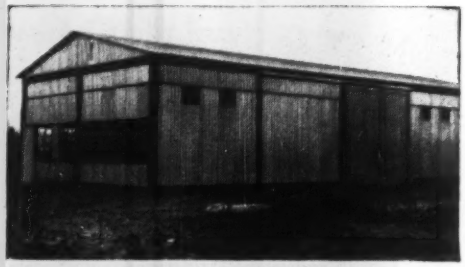

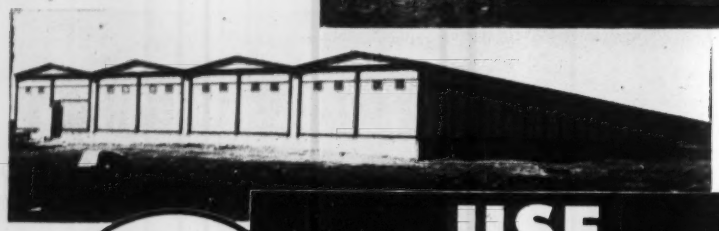

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LEGAL

The owner claimed that under the contract, all days except Sundays and holidays constituted working days. The contractor, on the other hand, produced testimony of experts in the building trades to the effect that in the construction business, the term "working days" had a well defined meaning and did not include days when the contractor could not work because of unusualy severe weather or days when the work was delayed by the acts of the owner—the causes that resulted in the delay in the instant case.

The court sustained the contractor's contention, stating that the owner and his architect, at the time the contract was entered into, must have known the meaning of the term "working days" when used in a construction contract.

(1) Lewis v Jones, 251 S.W. 2d 942, Court of Appeals of Texas, July 17, 1952.

Defects in specifications

A contract was entered into for the construction of a building without a heating system. During the course of construction, the owners decided to install a radiant heating system and employed an architect to prepare plans and specifications.

The general contractor thereafter employed a subcontractor to install the heating system. The contract provided that the same was to be installed in accordance with the plans and specifications prepared by the architect. The system as installed proved defective, not through any fault on the part of the contractors, but solely as a result of defects in the plans and specifications.

The owner then brought an action against the general and subcontractor to recover damages but was denied a recovery. This was affirmed on appeal.[1]

The appellate court held that the only duty devolving upon the general contractor and the subcontractor was that they perform the required work and furnish the necessary materials in accordance with the plans and specifications given to them for the purpose of submitting a bid. "A contractor who bids for work is bound only by the specifications which are shown to him at the time he bids and upon which his bid is based."

(1) Staley et al. v. New et al., 250 P. 2d 893, Supreme Court of New Mexico, Dec., 1952.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

WORTHINGTON BLUE BRUTE 600 COMPRESSOR owned by the A. R. L. Gunite Co., general contractors in Southern California. A. R. Leon, President of Gunite, writes that he is especially pleased with the Blue Brute's reserve horsepower and its precision control, which gives a steady volume of air without pressure variations.

"Our BLUE BRUTE always has power for an extra tool"

IN THE SAN CARLOS HILLS near San Francisco, the Thor Madsen Plumbing Company uses a 60' Blue Brute air compressor and Blue Brute clay spades to install service connections for a new home.

That's what A. R. Leon, President of the A. R. L. Gunite Company, says about his Worthington Blue Brute Air Compressor.

Gunite uses the Blue Brute in swimming pool construction and similar jobs in Southern California, and they need all the reserve they can get.

Another California contractor, the Thor Madsen Plumbing Company, uses a smaller Blue Brute to furnish air for clay spades and concrete breakers. They praise the "extremely dependable" operation of their Blue Brute air compressor.

These two reports are typical of those received from Blue Brute users everywhere. For over fifty years, Worthington construction equipment has been giving contractors dependable, economical service throughout the entire building industry.

Find out how Blue Brutes can step up efficiency on *your* construction job. Get in touch with your nearest distributor or Worthington district office for more facts and bulletins. Or write to the Worthington Corporation, Construction Equipment Division, Section H.3.3, Plainfield, New Jersey.

H.3.3

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You can't better a product like cast iron pressure pipe—with its unparalleled record of long life, economy and efficiency—by waving a wand. Yet the story of how the best product in its field has been made *still better* can be told in a paragraph.

Modernized cast iron pipe is a result of the sum total of recent product and process improvements attained by research and development.

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If you want the most efficient and economical pipe ever made for water distribution, your new mains will be laid with *modernized* cast iron pipe with either mechanical or bell-and-spigot joints. Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Ave., Chicago 3.

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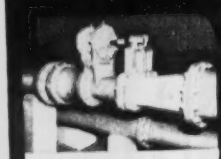
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U. S. 40, Cross Section of the United States of America—By George R. Stewart. 311 pp. Houghton Mifflin Co., Boston, Mass. $5.00.

Simplified Drafting Practice, A Modern Approach to Industrial Drafting—By W. L. Healy and A. H. Rau. 156 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, New York. $5.00.

Creators of Wealth—By Albert P. Greensfelder. 110 pp. Published in a limited edition by the author, 7041 Lindell Blvd., St. Louis 5, Mo.

Engineering Problems in the Reconstruction of the Brooklyn Bridge—Available from D. B. Steinman, 117 Liberty St., New York 6, N. Y.

Stress, Deflection and End Rotation Function for Beams of Uniformly Varying Depths—Copies available from C. Y. Lau, 351 Santa Clara Ave., Oakland 10, Calif. 50¢.

Noise: Causes, Effects, Measurement, Costs, Control—The University of Michigan Press, Ann Arbor, Mich. $5.

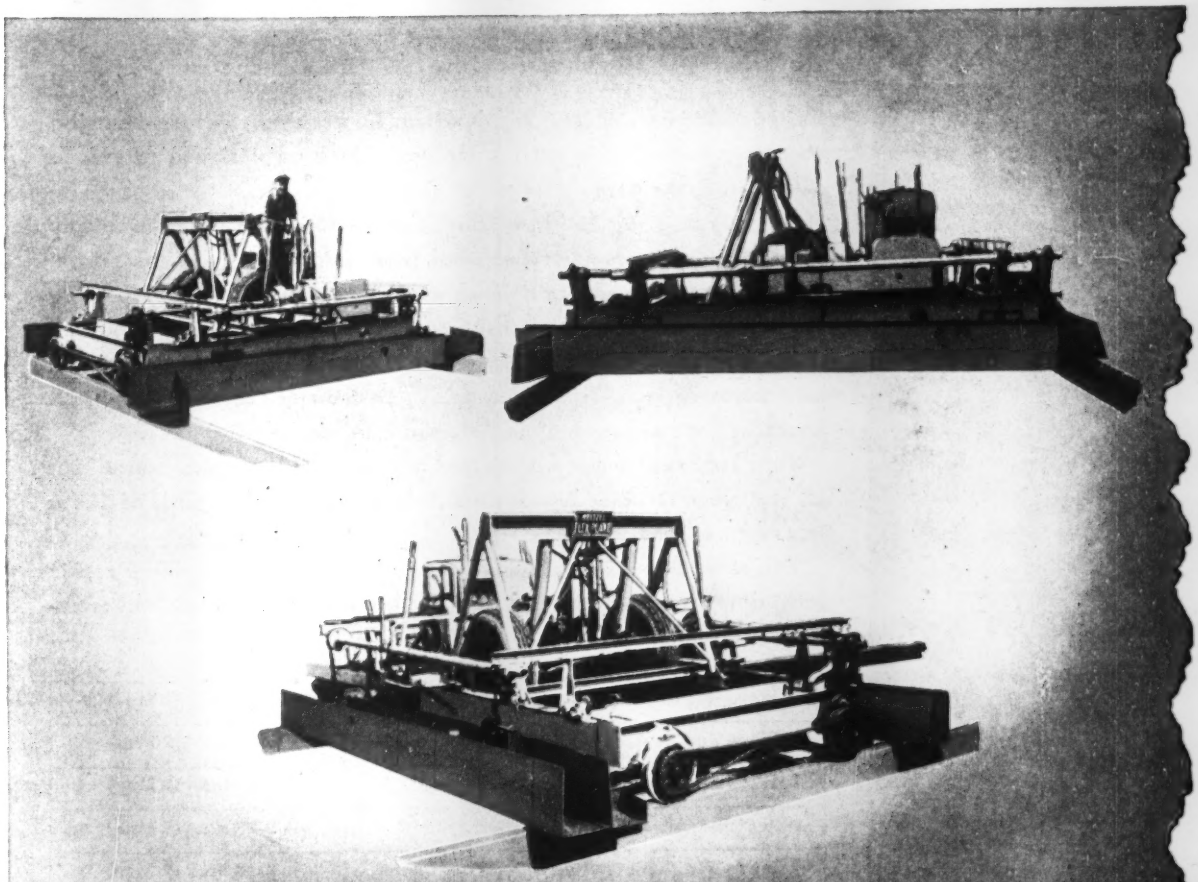
Large dam reports

The Transactions of the Fourth Congress of the International Commission on Large Dams held in New Delhi, India, in January, 1951, are now available for distribution. There are four bound volumes totaling 2,890 pages, and each volume is devoted to one of the four subjects discussed by the Congress. In each volume a summary of all of the papers, as presented by a "general reporter," is given in both French and English. The papers themselves are printed in either French or English, but in all cases an English summary is given.

Volume I is devoted to "Design and construction of earth dams and rock-fill dams with their core walls and diaphragms." The late William R. Creager, consulting engineer, Buffalo, N. Y., was the general reporter, and 23 individual papers are included.

In Volume II is discussed "Methods for determining the maximum flood discharge that may be expected at a dam and for which it should be designed; selection of type, capacity, and general arrangements of temporary or permanent outlets and spillways." Kanwar Sain of the Irrigation and Navigation Commission of India presents a summary of the 42 papers submitted, followed by the complete texts of the papers.

Volume III is devoted to "Concrete for large dams." The general reporters



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Here are three views of one of the most heralded machines in highway and airport construction history. It's the super portable Flex-Plane Detroit Special Finishing Machine.

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Special screeds and screed mounts enable this speedy machine to finish any type surface in the manner specifications call for. Both screeds are mounted outside the frame which permits faster screed changes. Machine is telescopic . . . can be altered to fit any size job in approximately 15 minutes. If you are in the business of building concrete streets, highways or landing strips, you can't afford to overlook this cost-cutting finisher. To get all the facts drop a note on your company letterhead to the **Flexible Road Joint Machine Company, Warren, Ohio, today.**

** Ask for name of contractor nearest you operating a Detroit Special — talk to him about the quality of work, the speed and the savings he has been able to get by using this great machine.*

HEILINERS

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. . . and that's where you make money on earth moving, with a machine that spends more hours on the job moving dirt. Heiliners are designed for easy, time-saving maintenance, and remember, wherever you're working, your nearby Heiliner distributor is ready to serve you with genuine Heiliner parts and the expert service of factory-trained field mechanics

NO NEED TO PULL WHEELS TO REPLACE AXLE

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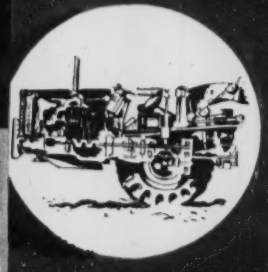

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WITH "time on the job" so important in working close earthmoving schedules, every feature of the Heiliner has been designed to reduce downtime to the barest minimum.

By designing the Heiliner along automotive lines, the time usually required to make major repairs has been reduced in many cases from days to hours. For example the axle can be replaced without removing the wheels. The clutch or transmission can be repaired without pulling the engine. The hydraulic pump can be changed in 1½ hours . . . transfer case can be taken off in 20 minutes . . . Hydrosteer can be replaced in 2 hours, and it's easier to take up slack on the steering cylinders.

Your Heil distributor will be glad to give you the complete story about all the other Heiliner features that help you move more yards of dirt at less cost per yard.

The chart below shows maintenance figures on major Heiliner repair jobs. Compare these figures with those for any other rubber-tired earth-movers on the market today.

Remove and Replace Axle Shaft	1-2 hrs. (1 Man)
Remove and Replace Master Clutch	4-6 hrs. (2 Men)
Remove and Replace Transmission	4-6 hrs. (2 Men)
Adjust or Replace Final Drive	1-2 hrs. (1 Man)
Remove and Replace Axle Differential Carrier	8-10 hrs. (2 Men)
Adjust P.C.U. Brake and Clutch	10-15 Min. (1 Man)
Replace P.C.U. Clutch Assembly	10-15 Min. (1 Man)
Replace P.C.U. Brake Assembly	15-20 Min. (1 Man)

Heiliners spend more time on the job . . . less in the shop . . . to keep earthmoving projects moving at a schedule-clipping pace.

were F. M. Lea and H. D. Morgan of the Department of Scientific and Industrial Research of Great Britain. They summarize the 30 individual papers, which fall in two groups: "Properties of concrete," and "Cracking of dams."

Volume IV is devoted to "Silting of reservoirs and related problems." The general reporter was Georges Drouhin, Director of Colonization and Irrigation, Algiers. Sixteen papers are summarized and printed in the volume.

Four-volume sets may be ordered from United States Committee on Large Dams, P. O. Box A-A, Boulder City, Nev. Price per set is $48.00 postage paid. Checks should accompany order and should be made payable to Secretary-Treasurer, U. S. Commission on Large Dams.

Miscellaneous notes

• **The first report** covering a series of investigations aimed at the reduction of shrinkage cracking in concrete masonry is now available from the Superintendent of Documents, Washington 25, D. C., for $0.20. The information has been published as Housing Research Paper No. 25, with the title, "Relation of Shrinkage to Moisture Content in Concrete Masonry Units." It summarizes the results of tests performed at the Research Foundation of the University of Toledo under the sponsorship of the government's Housing and Home Finance Agency.

This work emphasized the necessity of keeping concrete masonry dry not only before and during construction but also after.

• **Lightning protection**—Proper installation and use of lightning-rod systems for all kinds of structures is covered in the "Code for Protection Against Lightning," National Bureau of Standards Handbook 46 (Superintendent of Documents, Washington 25, D. C., 40¢).

Improper installation practice has resulted in great variations in lightning protection of both buildings and electric equipment. This handbook emphasizes personal precautions and protection of buildings and miscellaneous structures.

In addition to valuable material that has been revised from previous handbooks, the volume contains new rules on grain elevators and on vents and stacks emitting explosive dusts, vapors, or gases.

Important detailed specifications for lightning rods have been included.

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All estimates based on careful analysis of sub-soil borings, on actual experience in the soils to be dewatered, and on site investigations.

When soil conditions indicate other dewatering methods are more practical and economical, we are qualified to advise other proven methods.

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Yes, sir, Tractair is truly a money-saving handy man. See for yourself — watch Tractair at work. Ask your nearby Le Roi distributor to show you one.

Write today for job-data sheets and bulletins on Tractair.

Why rent or buy specialized equipment? For a fraction of the cost, you can do the same work with this Tractair and attachments.

Tamping — Tractair puts air to work running Le Roi-CLEVELAND backfill tampers. You get faster, easier tamping; better compaction; lower costs. A good example of how Tractair teams up with Le Roi-CLEVELAND air tools to save time, work, money.

Y-25

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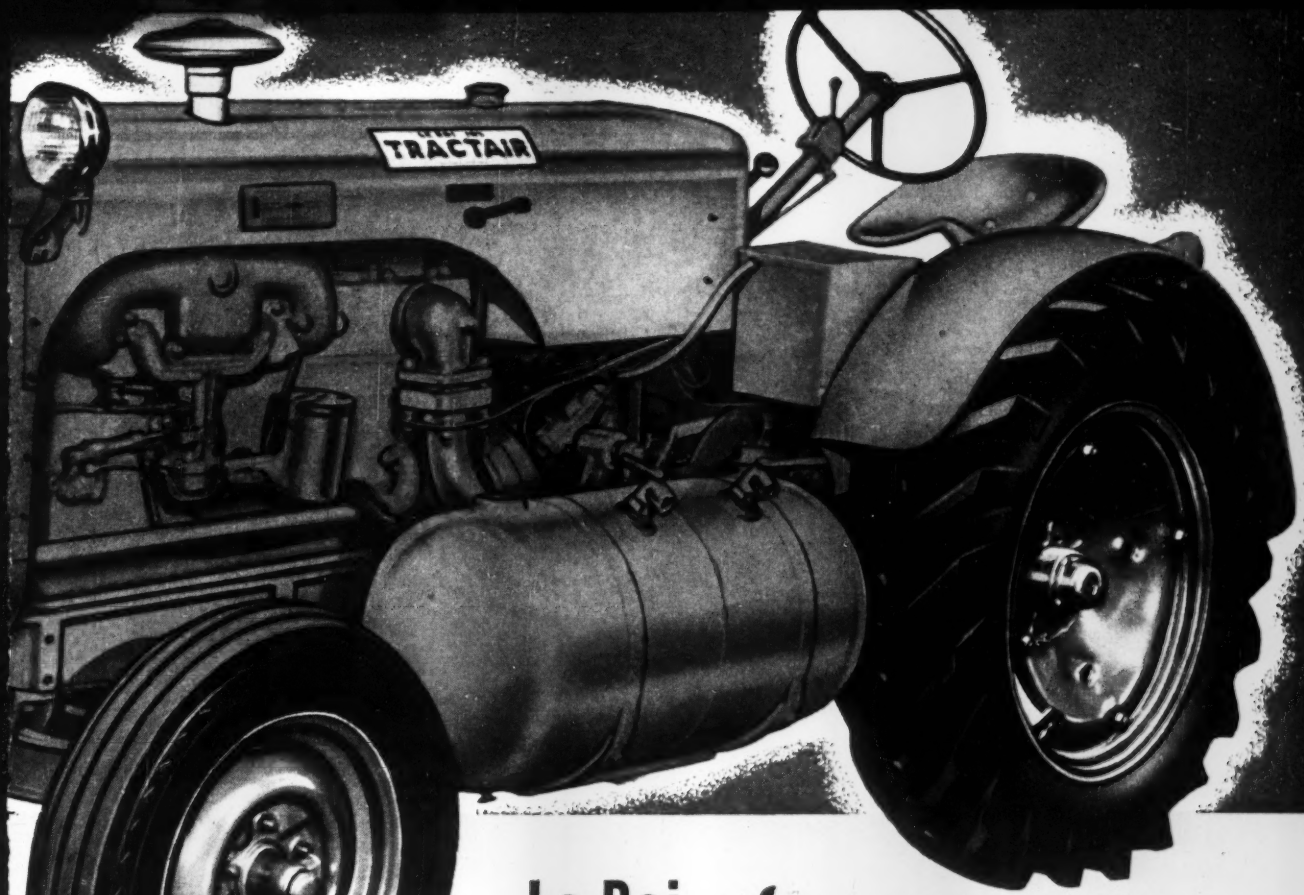

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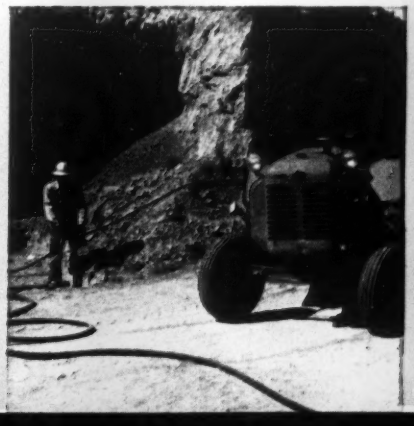

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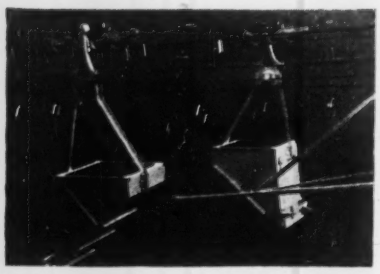
Tasa Coal Company Morgantown, West Va.

This 3,412-foot bicable tramway has been in continual operation for more than 25 years. It carries 200 tons of coal per hour at low ton-mile cost, giving dependable all-weather service.

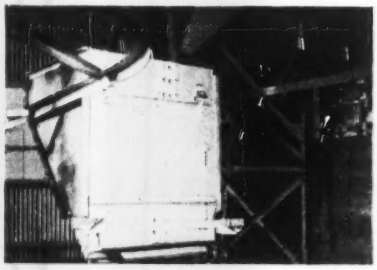
It spans a river in one 1500-ft. jump, crosses a public highway and a high tension line on the way from loading terminal to discharge hopper.

The 62 cu. ft. end-dump buckets load and unload automatically... discharging into a terminal bin at the rate of one every 26 seconds.

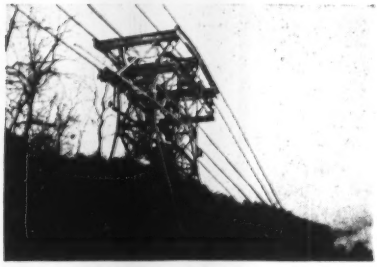
This aerial tramway was designed by the Tramway Division of United States Steel. The job included designing and furnishing cables, mechanical buckets, electrical equipment—and supplying all of the steel required.



Conveying materials for a few hundred feet or for several miles, Columbia-Geneva Tramways can be built to handle from 1½ to more than 300 tons hourly. They can be designed to meet almost every type of operating condition, and to handle many kinds of commodities easily and economically—from a tray of optical lenses to a carload of lumber.

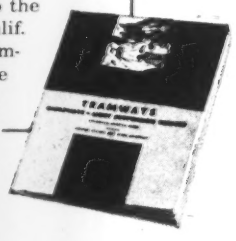


Load carriers, like this one on a bicable tramway, are available in many different types and sizes. Services of Columbia-Geneva's Tramway Division include designing the tramway...supplying the steel...excavating for foundations and erecting support structures...furnishing and installing all wire rope, cables, and electrical and mechanical parts.



Tramway support structures are of many types, depending on terrain and job. Because of this flexibility, tramways are free of ground contour, roads, railroads, etc., are unhampered by bad weather, and can climb extremely steep grades. Other advantages: loads can be moved without rehandling and rights-of-way are easier to acquire.

Send for this free manual on aerial tramways. Write on your letterhead today to the Tramway Division, Columbia-Geneva Steel, 141 Battery St., San Francisco 6, Calif. Or for an expert study of your transportation needs, ask for the services of a Tramway Engineer. He can show how an aerial tramway would pay off for you, and he can contract for its design and all phases of its construction, including materials.



Tramway Division

Columbia-Geneva Steel

Division United States Steel Corporation, San Francisco

UNITED STATES STEEL

Heating efficiency covered at recent ASHVE meeting

Warm-air heating systems, earth heat pumps, air spaces in walls, and heat exchange efficiency in panel systems were among the topics discussed at the semi-annual meeting of the American Society of Heating and Ventilating Engineers in Denver recently.

• **Perimeter heating**—A paper based on a report by the Engineering Experiment Station of the University of Illinois and the National Warm Air Heating and Air Conditioning Association points out the following observations:

With heating ducts in the floor slab—

• Air temperature differentials across a heated room were smaller with the loop system of perimeter heating than with the radial system of duct layout.

• The floor-surface temperatures were higher and more uniform in pattern and heat emission from the warmed floor was greater with the loop system than with the radial system.

• But the fuel consumption was less with the radial system than with the loop system.

• **Heat pumps**—A residential earth heat pump installation was reported on by Merl Baker, associate professor of mechanical engineering at the University of Kentucky. Prof. Baker said that the operating cost of the earth heat pump is competitive with conventional systems in areas having low or medium electrical rates.

Used in the tests was a nine-room well-insulated house containing 16,000 cu ft and having a heat loss of 48,000 heat units per hour based on a 70 deg F. temperature inside and minus five deg F. outside. It was revealed that the house was heated by an electrical consumption of 3,628 kwh and that operation was satisfactory at a minimum outside temperature of minus 22 deg F.

• **Air space in walls**—A decrease in height of the air space in walls was found to lessen the heat loss through the wall. This was the conclusion of a report on the thermal performance of frame walls by G. O. Handegord, assistant research officer, Division of Building Research, National Research Council of Canada and N. B. Hutcheon, professor of mechanical engineering at the University of Saskatchewan.

• **Panel systems**—A report by three members of the Society's Research Laboratory in Cleveland, L. F. Schutrum, G. V. Parmelee and C. M. Humphreys, outlined the following points on panel systems:

• Room air temperatures were found to be higher for a floor panel heated room than for a ceiling panel heated room for same surface temperatures.

• The effect on the room air temperature at the 60-in. level of varying the amount of infiltration air and its entering temperatures was about the same in floor panel tests as it was shown to be in the ceiling panel tests.

• In none of the tests reported here did the air temperature gradient in the room between the two-in. and the 90-in. level exceed 3.5 deg F.

Bridge tests check theory for prestressed concrete

Results of tests on the Arroyo Seco prestressed concrete footbridge in Los Angeles indicate that measured strains check closely with design predictions based on the classic straight-line strain variation theory for beams.

The results are presented in Research Report No. 12 of the University of California Institute of Transportation and Traffic Engineering, by T. Y. Lin, professor of civil engineering, and Jack Sylvester of the California Division of Highways.

The bridge was erected in 1951 (ENR May 10, 1951, p. 40). At the time it was the third prestressed bridge to be finished in the U. S.

A 110-ft pedestrian span across the Arroyo Seco in Los Angeles, the bridge consists of an 8-ft walkway designed for a live load of 55 psf and two precast 10-in. wide by 5-ft 8-in. deep girders with a top flange 1-ft 8-in. wide and 9 in. thick.

• **Theory verified**—The test results of the California engineers show that instantaneous elastic strains produced by dead and live loads can be predicted approximately by the usual elastic theory of bending. The greatest uncertainty lies in the proper value of the modulus of elasticity of the concrete. Measured elastic deflections and length changes of the girders agreed quite closely with those computed by the elastic theory.

The straight-line variation theory

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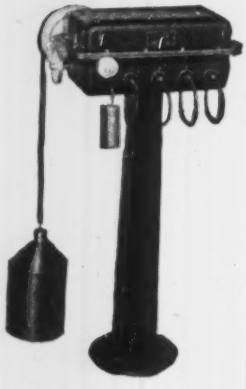

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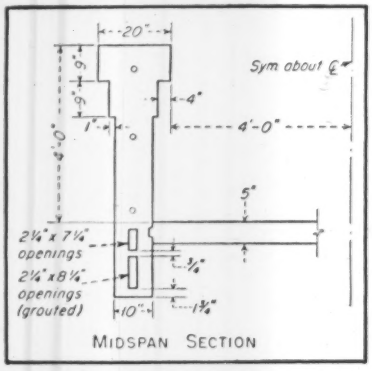

MIDSPAN SECTION

GIRDER SECTION for Arroyo Seco bridge in Los Angeles provides two rectangular openings for prestressing cables.

of total strain along the depth of a beam was verified in tests on the two prestressed girders, the total strain being the sum of elastic, creep and shrinkage strains.

• **Prestress accuracy**—The initial prestress in the girder indicated by the jack pressure gage was about 6% higher than that computed from the elastic lengthening of wires, after correcting for various initial losses in both cases. The authors of the research report believe that this difference would be less if possible friction loss along the wires were also considered.

On account of the prestressing process and elastic shortening of the concrete, the initial loss of prestress was about 8%; this is about 2% higher than the loss of prestress assumed in the design. After the initial loss of prestress had taken place, a further loss of about 12%—because of creep of steel and shrinkage and creep of concrete—was recorded after eight months' time. This later loss of prestress was 3% smaller than that assumed in the design for that age of the bridge.

• **Cracking**—The concrete deck for the bridge was placed after most of the shrinkage and creep in the girders had taken place. This deck is located below the centroidal axis of the girders and is therefore subject to tensile strain from the girders. As a result, free shrinkage was prevented in the slab, and transverse cracks have now become apparent at about 5-ft intervals.

• **Sluggish response**—Under test loads the bridge girders did not deflect immediately but responded sluggishly and reached their predicted deflections after a short time. The authors of the research report are of the opinion that this cannot be explained satisfactorily. However, the sluggishness of the bridge girders in responding to loads suggests a mechanical hysteresis phenomenon in the concrete. In an article in the March issue of the Engineering Journal of Canada by Professors S. Woinowsky-Krieger and R. J. A. Potvin of Laval University, Quebec, the results of tests carried out on concrete pipe are reported and hysteresis in concrete is considered. The article suggests that the immediate difference between predicted deflections and actual deflections in concrete may be due to a temporary, or hysteretic, change in the modulus of elasticity of the concrete. This temporary fluctuation in the elasticity may be due to the energy absorbed by the concrete when the test load is applied.

Glass heating panels perform well in tests

Under the sponsorship of the Housing and Home Finance Agency, Paul R. Achenbach of the National Bureau of Standards has conducted a study of radiant-heating glass panels. His test results indicate that electrically heated panels of this type constitute a satisfactory method of warming a house that is built without a basement.

However, even with the house thoroughly insulated, electric heating can be expected to entail higher annual heating costs in most sections of the U. S. than would coal, oil or gas, because useful heat derived from electricity has a higher unit cost in those areas than that derived from these common fuels.

Tests were conducted under controlled conditions in the NBS Test Bungalow, a small one-story house completely enclosed by an insulated structure. Unit coolers in the enclosure allow the control of exterior temperatures. For the purposes of the test, the house was treated as basementless.

Ten radiant-heating glass panels were installed in the test bungalows at the beginning of the tests—each rated at a capacity of about 820 watts. Temperatures at the centers of the glass plates at rated voltage averaged about 340 F.

Vertical and horizontal differences in the living zone (2 to 60 in. above

(continued on page 120)

Is Insulation Protection

PUZZLING

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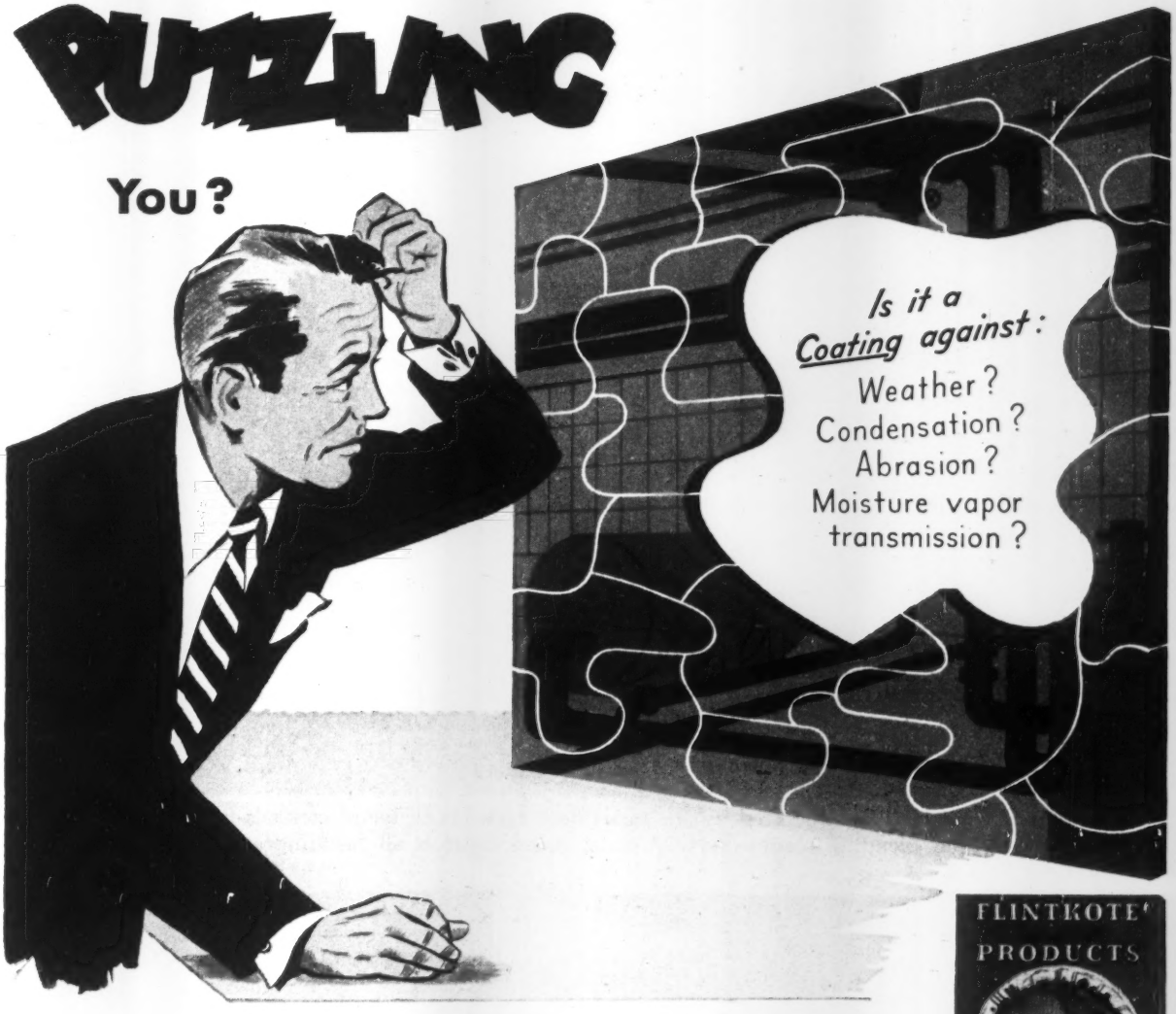

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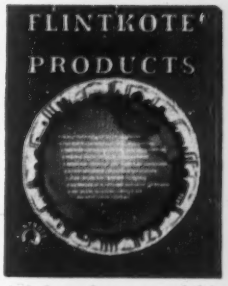

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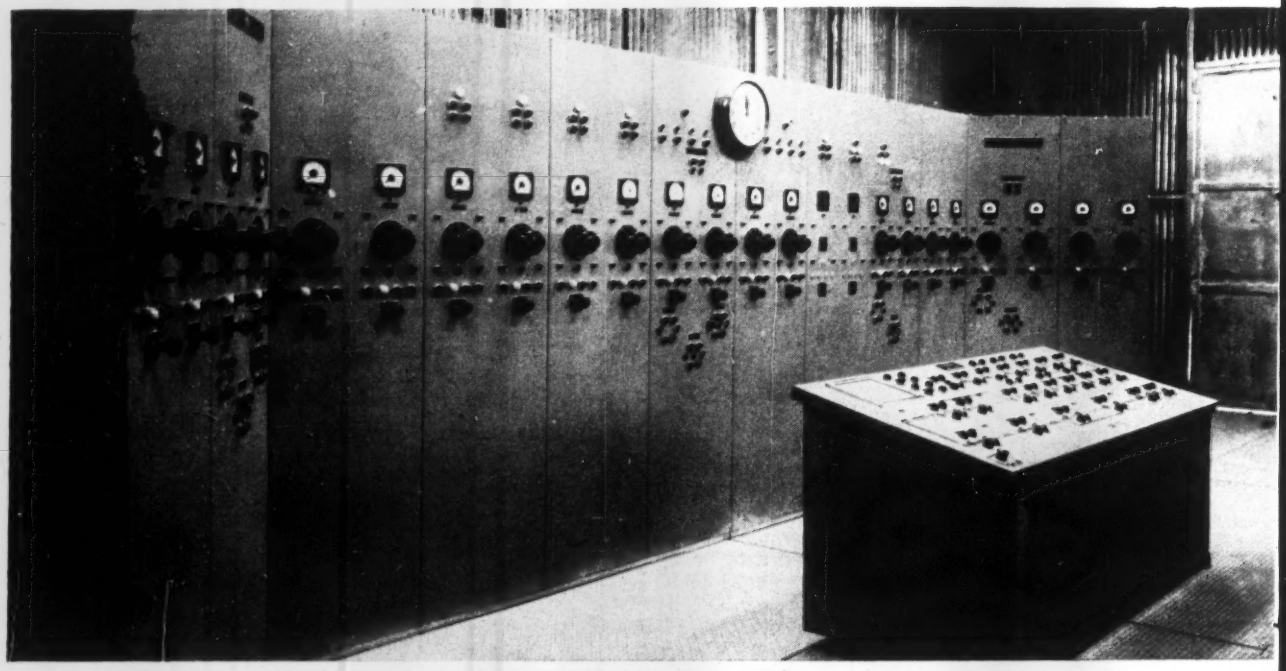
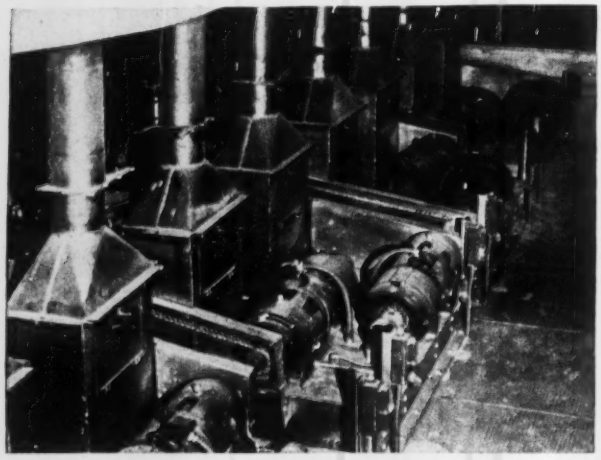
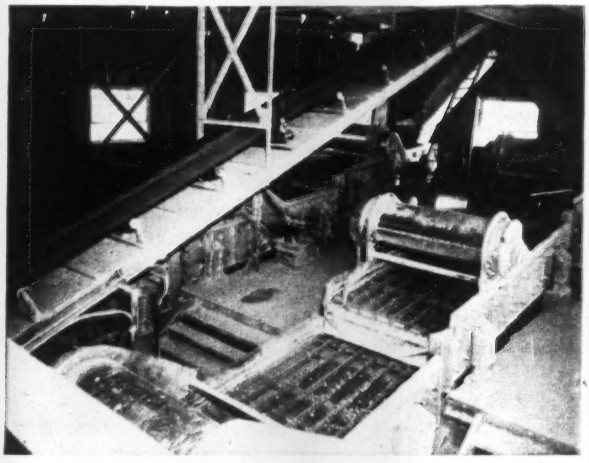


Central Control Room operated by one man: desk type bench board controls flow of stone through screening and blending plant — vertical panel board controls all blending and loading operations.



Drive end of 24" x 4'-6" unit type blending belt feeders showing variable speed gear motor drives and dust collection.



South end showing battery of 5' x 14' double deck Robins Eliptex Screens producing all sizes under 1".

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General view of screening and blending station looking southwest, showing main building, loading bins, main conveyor and recirculating conveyor to secondary crushing station.

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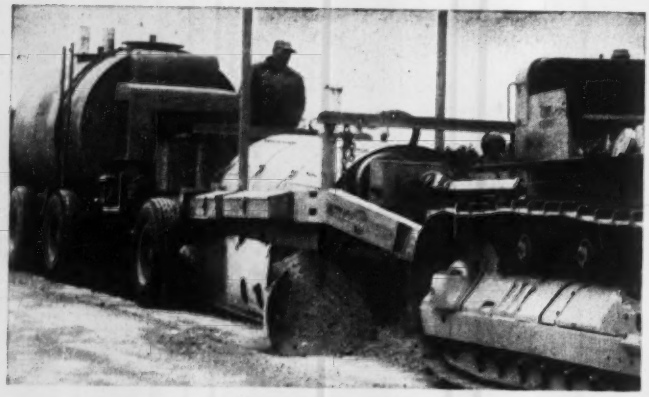

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the floor) were found to be moderately low—comparing favorably with a baseboard convector heating system. Insulating the walls and adding storm windows did not significantly change the horizontal or vertical differences observed.

• **Results of further tests** indicated the desirability of having units of lower or intermediate wattage capacity to heat smaller rooms. In this manner more power could be used in larger rooms while still maintaining the same total power capacity for all the units.

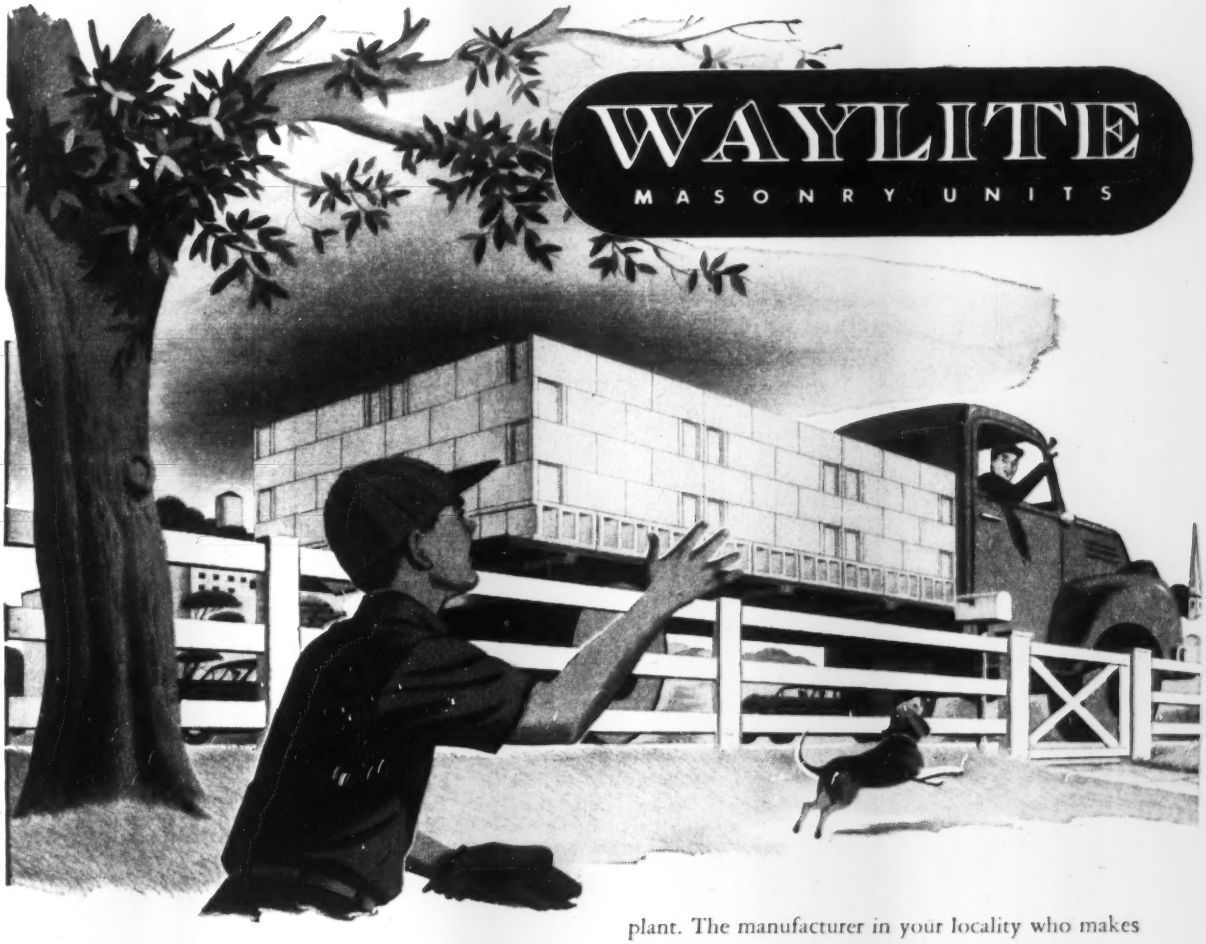
• **Comparison of radiant panel** heating under identical circumstances with a forced warm-air heating system with baseboard registers showed the radiant system provided more radiant energy at the 30-in. level and more comfort at the floor level.

• **Analysis of the tests** also indicated that compensated room thermostats with very low differential that produce rapid cycling of the heating units are desirable with radiant-heating glass panels. Rapid cycling would provide a continuous emission of radiant heat, since the cessation of radiation between heating cycles was quite noticeable when the "off" period was of long duration. Also, a control device for the system is needed that would permit heating of the house at a comfortable level at design outdoor temperature, but that would limit the electric power demand to a value approximately equivalent to the design heat-loss rate.

• **One type of glass panel** was subjected to thermal shock tests of a type that might occur in use, such as shower spray in the bathroom. The main effect of the treatment was an increase in power demanded by the panel because of the water's cooling action. Mechanical shock tests showed that the principal weakness was in resistance to shock around the edges.

• **Accepted methods** for the calculation of the heat loss of a house may be used in determining the total capacity of the heating units required, the tests showed. Further, the total energy required to produce a desired condition of warmth may be slightly less with electric panels than with more conventional heating units because of the absence of piping or duct heat losses and because the individual room thermostats can more readily prevent overheating of any of the rooms.

There's much more than meets the eye in a load of



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A wealth of information is available to you on Waylite's properties and characteristics, plus 20 years of widespread use on all types of construction. You'll find your local Waylite producer well informed and most helpful . . . there's 16 pages of Waylite data in Sweets . . . and competent engineering advice available by writing The Waylite Co., 105 W. Madison St., Chicago 2, or Box 30 Bethlehem, Pa.

WAYLITE { **LIGHT • STRONG • DURABLE**
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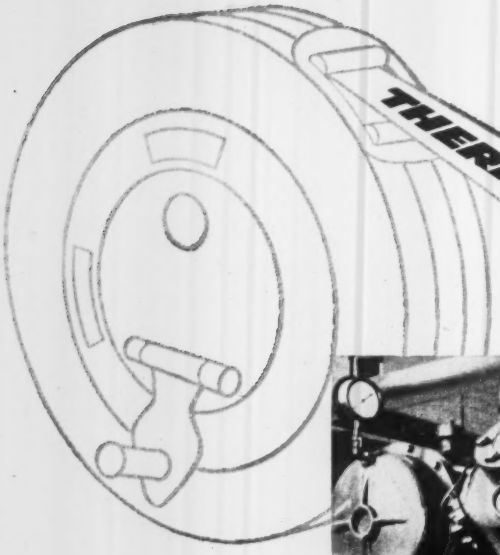
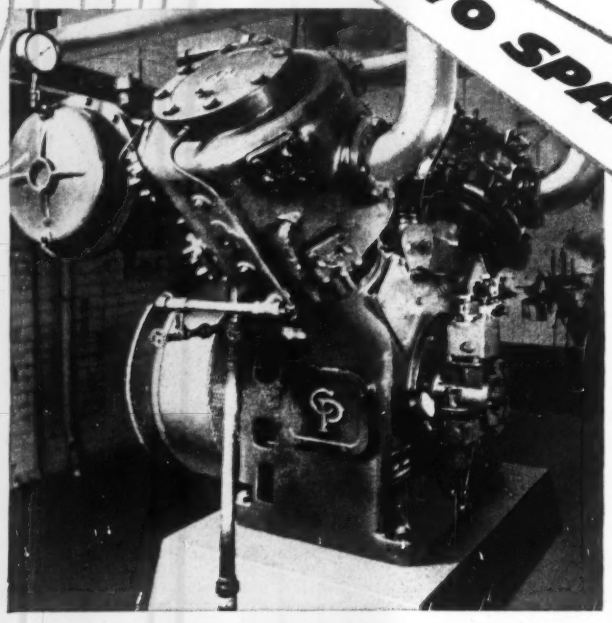
SOUND ABSORBING • NAILABLE • LOW COST



THERE'S SPACE TO SPARE...



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TYPE Y....

compressor

Chicago Pneumatic's compact, heavy-duty Type Y Compressor is ideal where space is limited. It takes up minimum floor area, but is designed for continuous heavy service. Shipped as a complete "package" ready for easy installation, it requires the simplest of foundations – needs no alignment.

The highly efficient Type Y Compressor has roller main bearings, precision connecting rod bearings, multi-step capacity regulation, and an easy-to-clean shell-and-tube intercooler.

Available in sizes from 75 hp to 250 hp, 410 cfm to 1663 cfm, and with flange mounted, belted and coupled motors. Write for Bulletin 766. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

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OBITUARIES

Joseph L. Budzichowski, building contractor of Albany, N. Y., died June 30.

Robert E. Kochs, 48, former consulting engineer in Rochester, N. Y., died June 30. He was associated with the L. G. DeQuasie & Co. as a sales and plant engineering expert. He made his start in the profession with his late father's firm, the Theodore A Kochs Co. of Chicago.

Jesse B. Hunt, 64, of Raleigh, N. C., died July 2. He was president of J. B. Hunt and Sons, highway supplies and building materials firm.

Russell S. Springer, 73, mechanical engineer, died in San Francisco July 1. He was one-time vice president of Holt Manufacturing Co., predecessor of Caterpillar Tractor Co.

Edward G. Carey, 76, Plainfield, N. J., maritime engineer and vice president of George W. Rogers Construction Corp., died June 29 in Wilmington, Vt. With the Rogers Corp. he was responsible for many large eastern engineering projects for railroads, steamship lines, shipbuilding industries and public utilities. Beginning his career as a surveyor in Massachusetts, he became expert consultant to engineering firms engaged in litigation. Later he was associated with The Empire Construction Co. of Baltimore, Md.; understudied the Chief Engineer in construction of Kensico Dam; supervised large War Department projects, including the limestone quarry for nitrate Plant No. 2 at Muscle Shoals at the close of World War I; served in an engineering capacity at the Brooklyn, N. Y., Navy Yard.

Scott Keith, 55, of Newton, Mass., partner in the Boston engineering firm of Metcalf and Eddy, died. He was a specialist in water supply engineering and hydraulics, and had been with the firm since 1920. During World War II he was chief engineer in the company's New York office at the time of the designing of the Bermuda Army Air Base.

Walter M. Cook, 60, a civil engineer with the Massachusetts Department of Public Works for more than 30 years, died June 28 at South Acton, Mass.

Melvin S. Anderson, 46, a civil engineer for Arthur G. McKee & Co., died June 27 at Fairview Park, Ohio. A graduate of the University of Illinois

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Saxe Welding Connection Units position and secure structural parts to be welded.

Clip K3A permits an adjustable connection.

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Write for 1951 edition, Structural Welding Practice Manual

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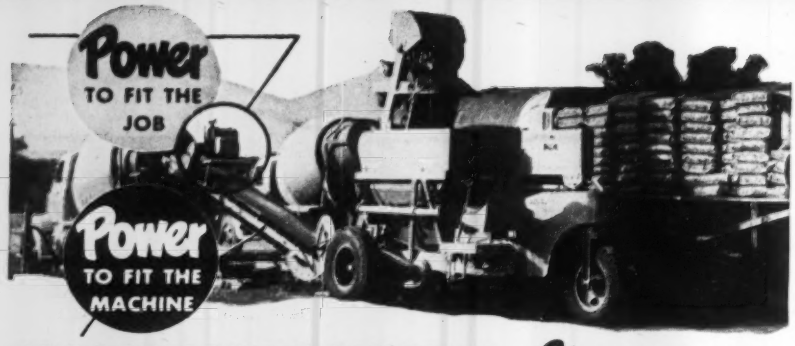

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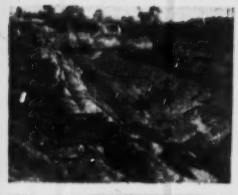

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OBITUARIES

School of Engineering, he was employed by several Chicago construction firms before going to Cleveland in 1937 to work for the steel mill and oil refining engineering-contracting company.

George T. Chilton, Sr., 54, superintendent for the State Highway Department at Fredericksburg, Va., died June 25 in Chatham Heights, Va. He had been with the department since 1919.

Marion E. Mills, 70, professor of civil engineering at the University of Oklahoma, died June 19 at Norman, Okla. He joined the university staff in 1927; in 1947 he developed a curriculum for a master's degree in structural engineering.

George W. Martin, 65, construction engineer, died at Albany, N. Y., June 17. He was a graduate of Worcester Institute of Technology and a retired Army colonel.

Industrial water use study covers 151 American cities

A survey on industrial use of public water supplies in Chicago, Detroit, Indianapolis, Cleveland, Madison, Wis., and 146 other cities in the Midwest has been published as Circular 253 by the Geological Survey. The report—sixth in a series—is free upon application to the Chief of Distribution, Geological Survey, Washington 25, D. C.

Figures show industrial use of water in the U. S. to be in excess of 75 billion gpd taken from private sources and about 6 billion gpd taken from public water supplies.

Laboratory tests reduce cost of harbor work

Pre-construction tests on the effect of waves and currents chopped $216,000 from the cost of the refuge harbor at Port Austin, Mich. This figure comes from Bert Robb, director of the state's Waterways Commission.

Site of the savings was the Lake Hydraulics Laboratory operated at Willow Run Airport by the University of Michigan. Experiments—conducted by means of a 90-ft tank and portable wave machine—created, in miniature, expected waterfront conditions.

Two important results stemmed from the studies: Cost of the subsequent harbor design was cut by 42% and wave action was reduced by 80%.

Honest Values

Once again the public seems to be thinking in terms of honest value — long term value. Public expenditures are being more closely examined.

We welcome this trend because the lifetime quality that is built into our products stands up well under close scrutiny — and convincingly supports the judgement and reputation of leading public officials and engineers who specify our products.

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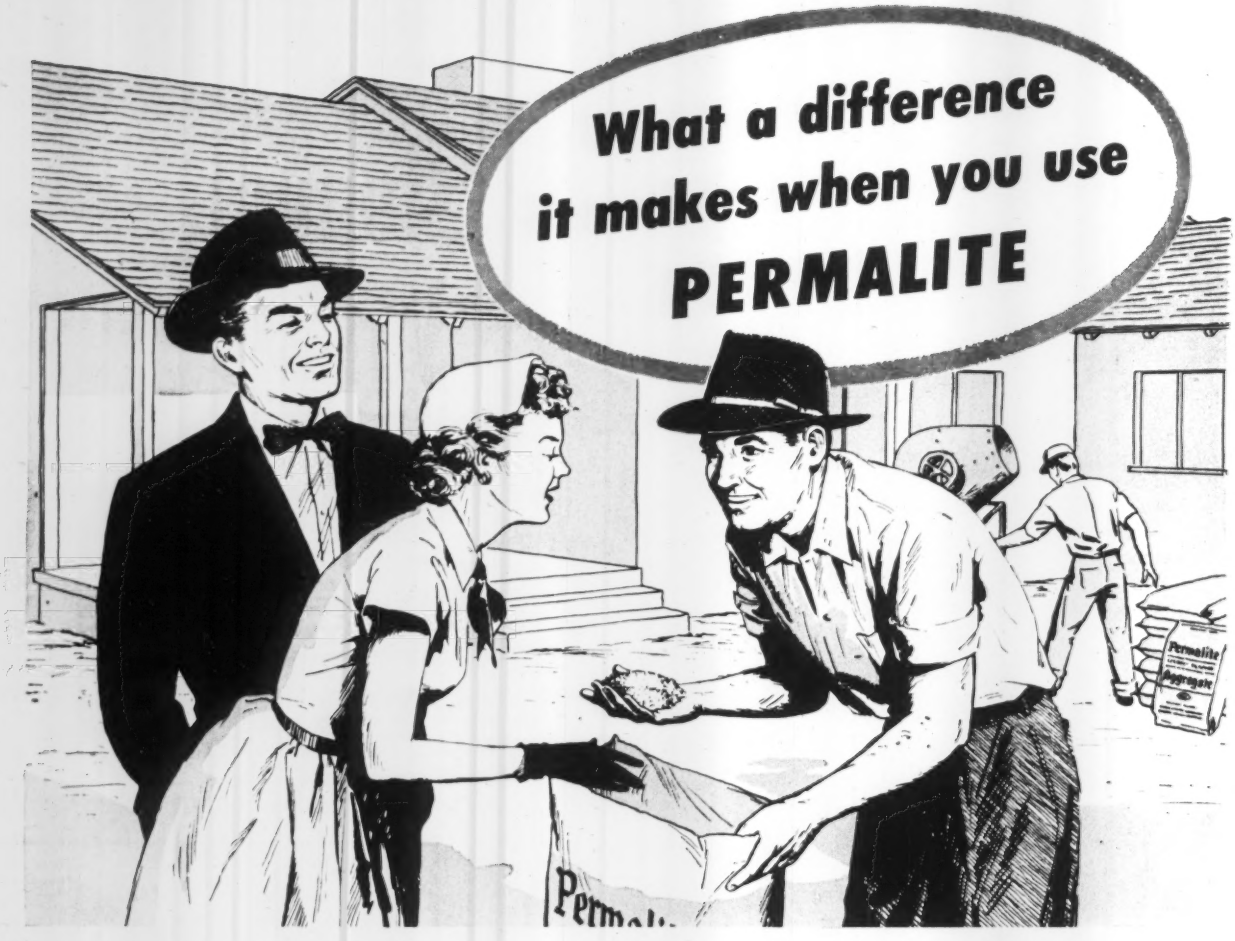

FOR FLOOR SLABS...

Permalite perlite aggregate concrete is ideal for making insulating concrete floor slabs. Permalite concrete has up to 10 times the insulating value of conventional concrete; used as a sub-base slab, it minimizes heat loss into the ground. Hence, it makes the ideal foundation for floor radiant heating systems. With any type of heating system, a sub-base slab of Permalite concrete helps to effect fuel savings and increase comfort. Sub-base slabs of Permalite concrete are usually covered with an abrasion-resistant layer of conventional concrete, although some builders omit this when asphalt or rubber tile, or other flooring, is to be laid on the slab.

FOR PLASTERING...

Permalite perlite aggregate plaster is the ideal base coat plaster for walls and ceilings. *Light-weight,* it is only ⅓ the weight of ordinary sanded plaster, saving in dead-load about one ton per 100 sq. yds., ½ inch thick; prevents unnecessary settling and cracking; and enables the plasterer to maintain optimum production throughout the entire day, with much less effort. *Insulating,* it adds three to four times more thermal insulation than ordinary plaster. *Fire-resistant,* it adds greater fire-protection. *Better workability* plus unsurpassed ease of handling and ease and speed of application are additional plus values of Permalite plaster.

To get the full story on Permalite's many advantages, send today for your free bulletin on Permalite, the largest-selling perlite aggregate in the world. Write Great Lakes Carbon Corporation, Dept. J347-612 So. Flower St., Los Angeles 17.

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Lake Zurich Concrete Products Co., Lake Zurich (Chicago), Illinois
The Whittemore Company, Roslindale 31, Mass.
Virginia Perlite Corp., Hopewell, Virginia

UNIT PRICES

New York power plant

Four contracts totaling $5,272,388 for the superstructure of the 74th Street power plant have been awarded by the Transit Authority of the City of New York. J. G. White Engineering Corporation are the engineers.

Contracts cover the general construction; electrical work; plumbing; and heating, ventilating and air conditioning of the superstructure for turbine room and boiler house extensions and for a new switch house being constructed under the current modernization program.

A total of twenty-five bids were entered on the four contracts. The low bids were 33% below the highs which totaled $7,816,264. Bidding was fairly close with the low bids ranging from 2% to 10% below the second low bids. The 10% difference was on the general construction contract, a 7% spread on the heating, ventilating and air conditioning, and 2% differences on the plumbing and electrical contracts. The $4,165,000 bid of Atlas Tile & Marble Works, Inc. and P. J. Carlin Const. Co. was lowest of six bids on the general construction and was 32% below the high. Ten bidders, the highest number on any of the contracts, competed for the electrical work with J. Livingston & Co. entering the low $485,438 bid, 33% under the high. Mechanical Installation, Inc. bid lowest of five on the heating, ventilating and air conditioning contract at $348,765 and the $273,185 bid of Fein Schlosberg, Inc. was lowest of four bids on the plumbing. These bids were 34% and 33% lower, respectively, than the high bids.

These structures will house, as a first 60 cycle unit, one 60,000 kw, 1250 psig, 950 F, 60 cycle turbine generator with two 450,000 lb per hr continuous rating boilers with necessary auxiliary equipment and switchgear. It will also house two 20,000 kw, 60/25 cycle frequency converters; modern 11,000 volt, 25 cycle switchgear for existing 25 cycle units; and general plant, personnel and office facilities.

When completed, the total plant capacity including additions will be 216,000 kw with a steaming capacity of 3,194,000 lb per hr. The new superstructure will be more modern in design than the original which was built in 1903. It will be built, in general, on rock close to the surface.

Plasterers in this area are receiving $3.95 per hr; bricklayers, $3.85 per hr; electrical workers, $3.80 per hr; steam fitters, $3.45 per hr; and common laborers, $2.05 per hr.

Bidders include:

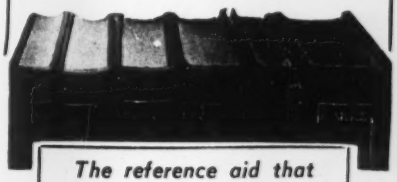
General Construction

1	Atlas Tile & Marble Works, Inc. & P. J. Carlin Construction Co., New York, N. Y.	$4,165,000
2	Cauldwell-Wingate Co., New York, N. Y.	4,635,725
6	Harry Jerseki, Inc. & Brennan & Sloan, Inc., New York, N. Y.	6,155,932

Bids: 5-14-53 Items	Unit	Quantity	Unit Prices 1 C	2
Protection & safety of power plant	ls	1	$125,000	$50,000
Demolition of equipment & structures	ls	1	460,000	400,000
Credit to city for salv.	ls	1	10,000	10,000
Remove old masonry	cy	150	100.00	138.00
Chip conc surfaces to depth 1½"	sf	4,500	1.00	2.20
Rock excavation	cy	1,900	80.00	93.50
Earth excavation	cy	600	15.00	20.00
Earth fill	cy	700	10.00	11.00
Foundation concrete	cy	1,800	45.00	72.00
Floor concrete	cy	6,500	60.00	77.25
Wall concrete	cy	1,700	110.00	144.50
Surface finish coat, 1½"	sf	4,000	0.50	0.49
Cement mortar lining, 2½"	sf	30,000	2.00	2.20
Nailing concrete	cy	15	50.00	44.00
Concrete sidewalk, 4"	sf	7,700	0.50	0.57
7"	sf	2,100	0.65	0.76
Straight steel curb	lf	1,000	7.00	7.50
Depressed steel curb	lf	170	11.00	9.90
Sealing condenser water discharge tunnel	lf	1	50,000	50,000
Miscellaneous stl & iron	t	325	700.00	798.00
Steel reinf bars	t	530	400.00	360.00
Steel wire mesh reinf	lb	25,000	0.70	0.60
Floor grating, 1½" deep	sf	47,000	2.90	2.24
1½" deep, 1" clear opening	sf	1,700	3.10	2.86
1½" deep, 1½" clear opening	sf	750	3.00	2.20
Straight cutting of floor grating	lf	3,500	1.80	0.17
Circular cutting	lf	1,000	1.80	0.33
Straight banding	lf	2,500	1.80	0.33
Circular banding	lf	1,000	2.70	0.55
Safety nosings	lf	175	2.30	1.10
Grating treads, 2/6" long	ea	230	8.60	10.75
3'0" long	ea	110	10.50	12.10
3'8" long	ea	320	12.40	14.30
5'9" long	ea	20	15.00	16.50
12 x 18 met access doors	ea	35	10.00	10.50
18 x 24	ea	40	15.00	13.75
24 x 30	ea	30	17.00	20.00
30 x 36	ea	25	41.00	46.20
36 x 36	ea	15	46.00	52.80
36 x 42	ea	25	54.00	60.50
Miscell iron castings	t	15	600.00	660.00
Transformer transfer truck	ls	1	6,000	5,500
Access doors to coal bunkers	ea	12	140.00	220.00
Type A, 12" wall-brick & tile	sf	79,000	4.70	6.25
type B, brick & tile	sf	14,400	3.30	5.15
type C, brick	sf	10,800	3.70	5.15
type D, brick & tile	sf	10,500	3.70	5.00
type E, brick & tile	sf	13,900	4.70	6.25
type F, brick and tile	sf	2,300	3.40	5.50
type G, brick & tile	sf	2,700	2.30	3.75
TypeH, 8" wall-brick tile	sf	4,300	2.80	2.25
type I, tile	sf	4,300	2.80	2.25
type I, tile	sf	16,000	2.60	4.00
type J, tile	sf	32,000	3.80	5.00
Type K, 6" wall-tile	sf	9,500	2.10	4.00
type L, tile	sf	18,500	3.70	4.75
type M, tile & 75% solid material	sf	1,900	2.20	4.30
Type N, 4" wall-tile	sf	17,000	1.80	2.50
type O, tile	sf	3,500	3.60	4.50
Type P, 2" tile wall furring	sf	2,600	1.70	2.50
Miscell brick & backup tile masonry	cy	185	90.00	180.00
Glass block panels	sf	3,800	4.00	4.50
Conc block masonry	cy	12	40.00	94.00
2" terra-cotta wall facing	sf	2,500	3.40	6.50
Terra-cotta window sills	lf	780	4.00	6.00
Terra-cotta parapet wall copings	lf	930	1.00	1.40
Terra-cotta reglet blocks	lf	1,400	1.00	1.50
Terra-cotta board of transportation seal	ls	61	1,000	1,000
Vitreous china soap holders	ea	64	3.00	10.00
Corr asb-cmt material	sq	65	100.00	99.00
2" precast conc plank	sf	38,000	0.60	0.61
20-yr bond built-up roofing with 2" insulation	sf	38,000	0.60	0.64
on rood deck	sf	8,000	0.20	0.55
20-yr bond built-up flashing with insul cants	lf	350	1.00	0.88
on concrete cants	lf	5,000	0.50	0.55

(continued on page 130)

Save time and money on construction jobs



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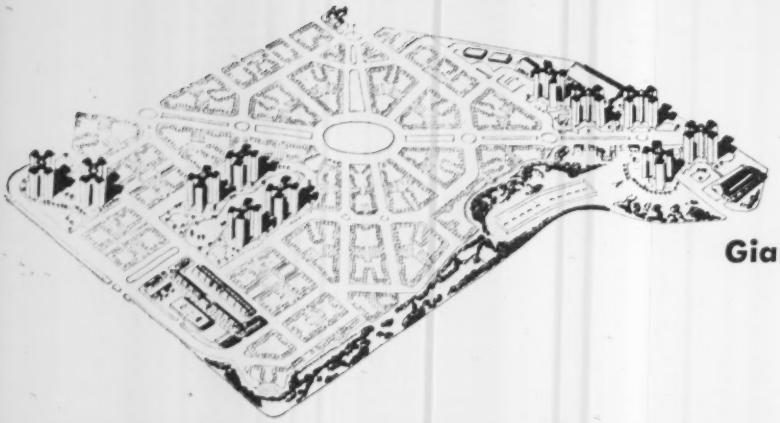
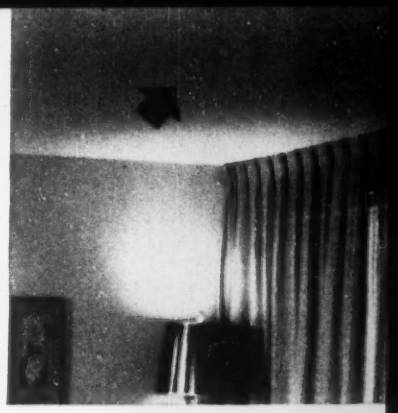


Giant apartment project demonstrates

Situated in park-like 200-acre tract, development consists of eleven 13-story cross-shaped units, 110 2-story colonial units. Plywood forms were used for all concrete.

THREE KEY ADVANTAGES OF FIR PLYWOOD FORMS



Plywood-formed ceilings were painted after grinding, spackling.

1. SMOOTH, FIN-FREE CONCRETE

On this modern housing development, fir plywood forms were used for (1) all exterior and interior wall surfaces and (2) reinforced concrete ceiling slabs. Result: Walls are smooth, dense, uniformly attractive; ceiling slabs were smooth enough to be painted direct after grinding and application of spackling compound—permitting a substantial savings by eliminating expensive plastering.

2. ECONOMY THROUGH RE-USE

Large built-up forms of Exterior plywood (see specification data below) were used 13 times on the 13-story tower buildings, eliminating form re-building as pouring progressed. After use on the large buildings, many of the plywood form panels were re-used, in some cases, an additional 8 to 10 times on the 2-story buildings which dot the 200-acre tract.

3. 20% TIME AND LABOR SAVINGS

According to estimates of engineers on the job, use of built-up plywood forms afforded a 20% savings in time and application costs over the cost of lumber forms—plus savings in finishing time and cost of both ceilings and exterior walls. Even on interior walls where appearance was no factor, time and labor savings plus re-use made plywood the most economical material.

PLYWOOD FORM SPECIFICATIONS:

These registered industry trademarks are your guide, guard and assurance of DFPA quality-tested fir plywood manufactured especially for concrete form work. INTERIOR PLYFORM (highly moisture-resistant glue) gives multiple re-use; up to 12-15 are not unusual. For maximum re-use, specify EXTERIOR PLYFORM (100% waterproof glue). For special architectural concrete use fir plywood with "A" face veneer (such as used for exterior walls and ceilings on project described above) or one of the new plastic-surfaced or hardboard faced fir plywoods identified by this star and link industry hall mark of quality. ★ DFPA INSPECTED — A Product of the Plywood Industry

For further information write Douglas Fir Plywood Association, Tacoma 2, Washington.

SPECIFY-DFPA INSPECTED FIR PLYWOOD

CONTRACTORS: Starrett Bros. & Eken, Inc., New York
SUBCONTRACTORS HANDLING JOB: Dinwiddie Construction Co., San Francisco
ARCHITECTS: Leonard Shultze & Associates, New York
Thompson & Wilson, San Francisco, architectural consultants

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ECONOMY
METAL FORMS

UNIT PRICES

(Continued from p. 127)

Item	Unit	Quantity	1 C	2
5-ply tar & felt waterproofing in shower rooms	sf	1,500	0.20	0.40
Sheet copper work	lb	3,000	1.20	1.10
Wood roof curbs	lf	1,000	0.50	0.80
Wood nailing strips	lf	1,100	0.50	0.70
Metal flashing forms	lf	700	0.30	1.00
Insulation board	sf	60	2.00	1.10
2" pitch in pitch boxes	sf	60	2.00	5.50
Windows for stairway #8	ls	1	14,000	15,800
Windows for office floor at elevation 141'-0"	ls	1	8,300	10,400
Projected windows intermediate weight	sf	540	6.00	6.60
Horizontal pivoted windows-party line	sf	100	8.00	9.70
Proj windows with 66° ventilator area	sf	170	4.00	4.80
Pressed met window framing-trim & mullions	lb	13,000	1.00	0.90
Revolving door unit-74th. St. entrance	ls	1	14,000	15,300
75th. St. entrance	ls	1	9,500	11,000
Special door unit-office entrance	ls	1	2,800	3,100
Steel rolling door,				
19' 0" x 21' 0", ext	ea	1	1,500	2,100
20' 0" x 20' 0", ext	ea	1	1,500	2,100
20' 0" x 22' 0", ext	ea	1	1,500	2,200
13' 9" x 14' 0", ext	ea	2	1,300	1,100
11' 0" x 15' 0", ext	ea	1	600.00	1,100
16' 0" x 16' 0", ext	ea	1	900.00	1,400
9' 0" x 11' 0", intint	ea	16	500.00	580.00
9' 0" x 12' 0", intint	ea	17	550.00	650.00
Metal covered wood door				
3' 0" x 7' 0", SS	ea	86	300.00	220.00
3' 8" x 7' 0", SS	ea	2	300.00	250.00
5' 0" x 7' 0", DS	ea	12	400.00	330.00
6' 0" x 7' 0", DS	ea	3	400.00	330.00
3' 0" x 7' 0", SS W/O fr	ea	6	150.00	165.00
3' 8" x 7' 0", SS W/O fr	ea	10	160.00	210.00
10' 8" x 7' 2", D sliding	ea	1	400.00	530.00
Hollow metal door				
3' 0" x 7' 0", SS	ea	119	180.00	200.00
3' 8" x 7' 0", SS	ea	16	220.00	210.00
6' 0" x 7' 0", DS	ea	5	400.00	360.00
6' 4" x 7' 0", DS	ea	5	400.00	390.00
3' 8" x 7' 0" SS W/O fr	ea	2	200.00	220.00
Tubular steel door, 11' 6" x 15' 2", D sliding	ea	15	1,000	1,200
Key control sys & cabinet	ls	1	700.00	1,000
Railing & trim-75th stl lobby	ls	1	700.00	5,200
Cast brass threshold with abrasive surface	lb	1,600	1.00	1.65
Adjustable wall louvers	sf	2,200	9.00	9.40
Stationary wall louvers	sf	800	5.00	6.60
Automatic outlet wall louvers	sf	80	8.00	8.30
Galv steel sill plates & filler plates	lb	1,100	0.60	0.65
Stainless stl entrance canopy fascias	ls	1	5,000	2,800
Ornament letters near 74th & 75th st entrances	ls	1	500.00	1,000
Special glass shielding covers	ls	1	2,200	2,200
Flush metal partitions,				
7' 2½" high	lf	1,300	15.00	16.50
9' 4" high	lf	450	20.00	20.00
Ind met partitions, plus filler,				
10' 6" high	lf	230	22.00	17.60
9' 5 8" high	lf	100	20.00	17.60
Wire partitions	sf	3,000	2.00	2.75
Sound baffle plates	sf	1,200	2.00	1.65
Encl for mech control room	ls	1	4,300	4,500
Doors, 3 x 7 SS, flush stl	ea	38	93.00	88.00
3 x 7 SS, flush stl, trans	ea	5	100.00	86.00
5 x 7 DS, flush stl	ea	6	400.00	187.00
3 x 7 SS, stl or wire, ind metal	ea	4	100.00	72.60
3 x 7 SS, with wicket, industrial metal	ea	2	70.00	93.50
3 x 7SS, dutch ind. met	ea	3	200.00	105.00
6 x 7 DS, dutch ind met	ea	1	400.00	205.00
3 x 7 sliding, stl or wire, ind metal	ea	3	130.00	105.00
5 x 7 DS Wickets, ind met	ea	1	150.00	176.00
6 x 7 DS wire partitions	ea	3	300.00	92.00
Sts telephone hole opening with shelf	ea	3	20.00	15.00
Standard wickets	ea	1	25.00	35.00
Met toilet & shower encl	ls	1	4,000	5,000
Flush metal wainscots	ls	1	9,700	13,100
Met pan-type suspended accoustical ceilings	sf	44,000	1.20	1.20
Met egg crate suspended ceilings	sf	280	14.00	11.00
Sheet stl air barrier over acoustical ceilings	sf	24,000	0.20	0.22
Terrazzo floors, Platforms & stair treads	sf	1,500	1.00	1.00
Terrazzo cove base	lf	220	1.50	1.40
Quarry tile floors	sf	24,000	1.30	1.00
Quarry tile cove base	lf	800	1.25	1.20
Quarry tile beveled base	lf	500	1.15	0.50
Quarry tile stair treads 3' 0" long for pans	ea	180	5.50	5.00
3' 8" long for pans	ea	960	6.00	6.00
3' 0" long on concrete	ea	20	7.00	10.50
3' 8" long on concrete	ea	15	7.00	12.00
Unglazed ceramic tile work	sf	7,000	1.50	1.05

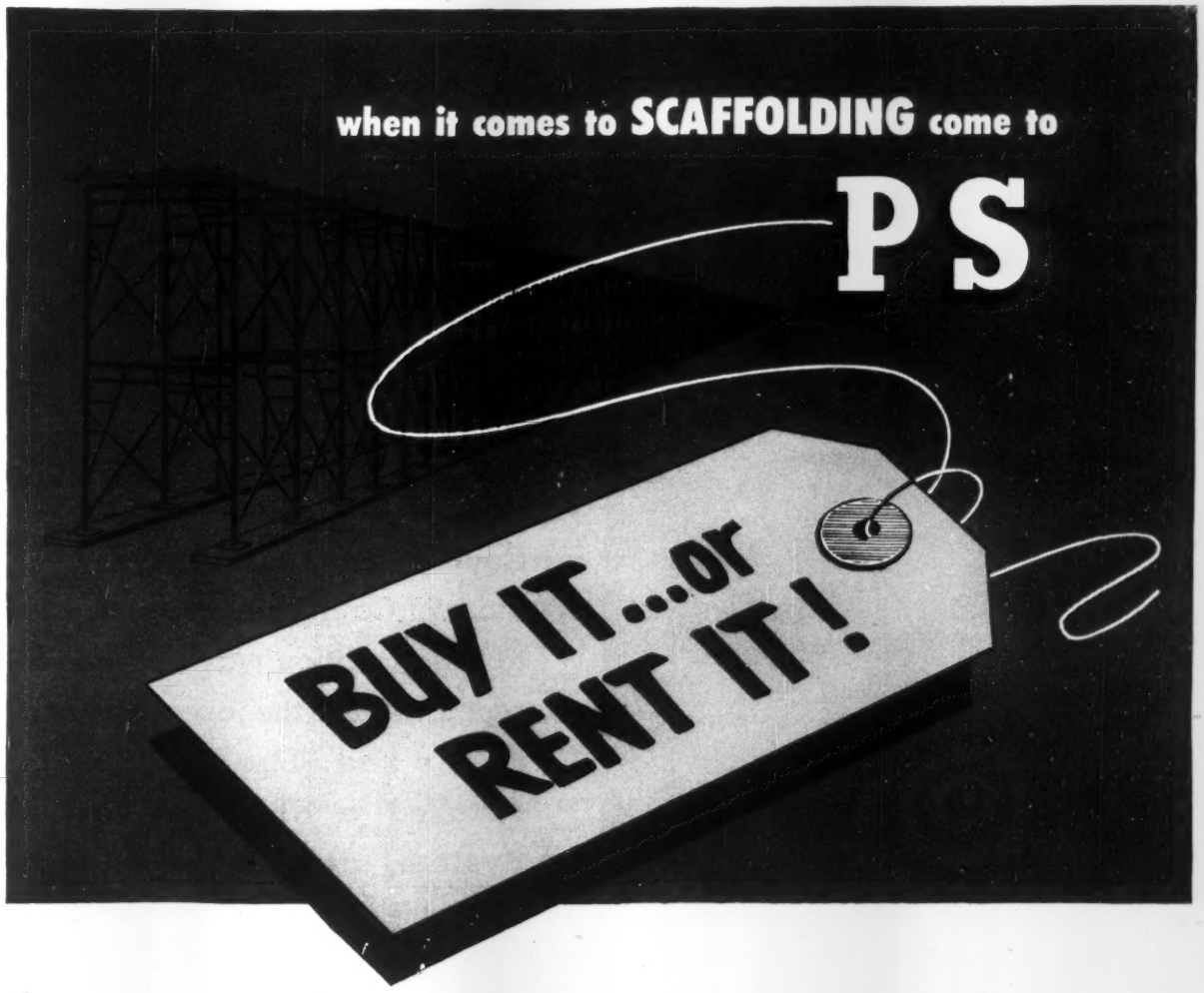
Item	Unit	Quantity	1 C	2
Marble thresholds	lf	35	3.00	3.30
Gypsum plaster with Keene's cmt finish ceilings	sy	600	10.00	9.50
Gypsum plaster, except acoustical, on met lath	sy	70	8.00	9.50
Gypsum plaster, except acoustical, on msry	sy	400	5.00	3.30
Acoustical plaster, on masonry	sy	180	5.00	6.30
Linoleum floor coverings	sf	23,000	0.40	0.40
Asph tile floor coverings	sf	28,000	0.20	0.20
Asphalt cove base	lf	3,000	0.20	0.28
Elevator plant, no. 1	ls	1	50,000	52,000
No. 2	ls	1	50,000	53,000
No. 3	ls	1	50,000	50,000
No. 4	ls	1	41,000	39,000
No. 5	ls	1	34,000	34,000
Pipe identification bands in dia		21,000	0.20	0.22
Codes on pipe bands having letters not larger than 1"	ea	1,100	0.50	0.55
letters, 1" 2"	ea	1,500	0.80	0.88
letters, 2" 3½"	ea	1,000	2.00	1.65
Letters on doors & walls, painted	ea	11,300	0.20	0.20
Letters & numerals on equipment, stenciled	ea	5,000	0.10	0.11
Metal danger signs	ea	270	7.00	11.00
Special metal signs	ea	125	7.00	14.50
Moving mat & equip man-day		1,000	50.00	35.00
Crane, 25 tons	ea	1	19,000	22,000
15 tons	ea	1	16,000	19,000
10 tons	ea	1	16,000	18,000
Electric hoists, 10 tons	ea	1	4,100	5,000
5 tons	ea	1	2,200	2,000
3 tons	ea	1	1,400	2,900
Chain hoists, 10 tons	ea	3	1,400	1,800
5 tons	ea	6	500.00	1,450
2 tons	ea	1	250.00	950.00
1 ton	ea	7	150.00	600.00
Paint str steel	ls	1	111,255	60,000
Paint two stacks with heat resisting paint	ls	1	1,900	2,000
Paint conc surfaces installed by others	sf	25,000	0.09	0.09
Paint engineers field office	ls	1	1,000	1,000
Sandblasting two stacks	ls	1	4,400	6,000
Connect old turbine house structure to new	ls	1	13,400	50,000
Restore 60-ton power house crane	ls	1	4,200	5,000
Clean intake & discharge tunnel diver-day		130	270.00	325.00
Clean intake & discharge tunnel diver-re-day		15	270.00	325.00
Telescope lift platform	ls	1	3,000	3,500
Extend turbine room crane trolley wires	ls	1	3,000	3,500
Clean interior walls	ls	1	8,500	4,000
Coal bunker temp monitor system	ls	1	7,000	5,000

Electrical Work

1 C	J. Livingston & Co., New York, N. Y.	$485,438
2	Rao Electrical Equipment Co., Inc., N. Y., N. Y.	493,599
10	L. I. Waldman & Co., Inc., Long Island City, N. Y.	726,599

Item	Unit	Quantity	1 C	2
Auxiliary control panel	ls	1	$2,100	$3,090
No. 12 AWG, single conductor, solid, type T, 600 v wire	lf	250,000	0.08	0.08
No. 6 AWG, single conductor, stranded, type T, 600 V wire	lf	15,000	0.28	0.20
number 2	lf	5,000	0.50	0.35
number 1 0	lf	2,000	0.65	0.56
number 4 0	lf	5,000	0.95	0.90
No. 12 AWG, single conductor, solid type RH, 600 V wire	lf	100,000	0.09	0.08
no. 6, stranded type RH 600 V wire	lf	15,000	0.30	0.21
number 2	lf	5,000	0.53	0.37
number 1 0	lf	2,000	0.70	0.58
number 4 0	lf	10,000	1.00	0.96
Galv stl rigid conduit, industry standard, ½"	lf	60,000	1.00	1.27
1"	lf	30,000	1.45	1.60
1½"	lf	12,000	2.50	2.56
2"	lf	1,000	4.40	3.30
3"	lf	4,000	5.50	5.14
½" flexible	lf	1,000	2.35	0.95
2 conductor no. 12 AWG flexible armored cable	lf	5,000	1.50	0.38
3	lf	1,000	1.90	0.47
AWG bare copper grounding cable	lf	5,000	1.70	0.43
AWG, twisted pair telephone wire	lf	10,000	0.32	0.35
AWG 26-pair, lead covered cable	lf	2,500	2.00	1.48

(continued on page 133)



Did you know that "Trouble Saver"® Sectional Steel Scaffolding is available on both a *buy* or *rent* basis? Yes, you can have it the way YOU want it! Either way—buying or renting—there are certain advantages. And PS can help you weigh them, and decide which is best for you.

Some contractors may want to buy "Trouble Saver", or TubeLox® Scaffolding to meet their general needs. Then, when jobs come along which require more scaffolding or special accessories, they can rent from the large PS Co. stocks throughout the country.

Other contractors may not want to buy... it may be to their advantage to rent the scaffolding. When renting, the scaffolding is maintained for them, and the progress of the job doesn't depend upon the amount of scaffolding they own.

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The contractor encountered ground water and unstable soil in the construction of Fairview Road Trunk Sewer for Orange County Sanitation District No. 1, State of California. Progress due to this condition was retarded to a point where the job was almost in the red. The contractor installed a STANG Wellpoint System, and under STANG Supervision, the rate of progress was doubled.*

* Actual progress figures are on record.

- With the large sewer projects now being let thruout the country it will pay you to consult STANG on projects involving excavation in unstable, water-bearing soil so that you can take the GUESS out of your estimate.

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Telephone: Walnut 7796

TACOMA, WASHINGTON
2339 Lincoln Ave
Telephone: Broadway 4362

NEW YORK, N. Y.
No. Two Broadway
Telephone Whitehall 3-0565

UNIT PRICES

(Continued from p. 130)

Item	Unit	Quantity	Unit Prices 1 C	2
Telephone terminal boxes				
18" x 30"	ea	25	52.00	63.60
12" x 24"	ea	25	36.00	51.60
8" x 20"	ea	50	27.50	43.20
Complete emerg magneto telephone sys, equip, coordinated with existing system	ls	1	387.00	396.00
Compl intercom sys, equip	ls	1	697.00	1,116
24 circuit annunciator panels, completely wired & equipped, except for indicating lights	ea	2	785.00	1,272
24 circuit annunciator panel, completely wired & equip	ea	2	950.00	1,104
14 circuit	ea	3	613.00	873.60
10 circuit, incl alarm hrn	ea	1	758.00	1,050
Compl engine signal panels for control room	ea	9	390.00	456.00
incl signal horns for turbine room	ea	9	457.00	500.00
Telephone booths	ea	14	308.00	318.00
120-240 V, single phase, A-C power panels, 8 circuit	ea	4	103.00	135.84
12 circuit	ea	1	136.00	284.16
3 phase, 4 wire, 600 V, welding receptacles, 60 amp	ea	150	37.00	42.00
200 amp, weld rescept	ea	29	80.00	130.80
60 amp, power plugs	ea	20	12.50	14.40
200 amp, power plugs	ea	10	33.00	42.00
10 KVA, 480 V to 120-240 V single phase power transformer	ea	5	179.00	248.46
8 circuit, 440 V-3 phase power panels	ea	4	503.00	644.40
240 V, single phase	ea	2	176.00	242.88
30 amp, 600 V, 2 pole fused disconnect switches	ea	5	36.00	39.60
Single phase, 3-wire, A-C lighting panels, 8 circ	ea	3	112.00	91.92
16-circuit	ea	4	186.00	255.84
30-circuit	ea	2	315.00	439.20
16-circuit with split bus & auto transfer switch	ea	12	313.00	436.80
20-circuit	ea	10	349.00	492.00
24-circuit with 15 amp circuit breakders, split bus & auto transfer sw	ea	12	390.00	547.20
30-circuit with split bus & auto transfer switch	ea	6	443.50	642.00
24-circuit with 20 amp circ breakers, split bus & auto transfer switch	ea	2	392.50	547.20
Lighting fixtures incl lamp type F-150	ea	60	18.60	14.28
type F-200	ea	60	19.15	15.00
type F-300	ea	30	24.00	20.28
type G-100	ea	30	18.50	14.28
type G-150	ea	220	18.90	14.76
type G-200	ea	830	19.30	15.12
type G-300	ea	65	22.30	16.68
type K-2-15	ea	120	19.35	17.88
type L-100	ea	10	11.50	9.48
type L-200	ea	10	12.90	10.68
type N-2-40	ea	70	12.70	11.28
type N-3-60	ea	100	15.10	12.48
type P-1500	ea	40	32.45	31.32
type O-100	ea	575	14.20	10.68
type Q-150	ea	200	14.50	11.28
type Q-200	ea	150	14.85	11.88
type Q-200	ea	150	14.85	11.88
type R-200	ea	10	19.50	20.64
type R-150	ea	15	19.40	20.64
type S-100	ea	15	12.95	9.48
type T-100	ea	10	10.60	5.52
type U-200	ea	10	19.20	13.08
type U-150	ea	10	18.80	12.48
type U-100	ea	155	18.40	11.88
type X-150	ea	5	80.00	17.88
type Y-100	ea	20	71.00	15.48
type Y-150	ea	25	75.75	16.08
type Y-200	ea	5	83.60	16.68
type Z-100	ea	15	17.05	15.48
type AA-150	ea	30	17.75	12.12
type AA-200	ea	5	19.20	14.28
type AC-150	ea	15	45.70	49.80
type AD-200	ea	10	37.00	37.80
type AF-200	ea	5	37.60	37.80
type NN-2-40	ea	65	15.70	10.68
type NN-3-60	ea	5	22.80	11.88
type PP-300	ea	130	21.85	13.68
Lighting fixtures incl lamps & starters, type H-2-240	ea	230	47.05	56.52
type J-2-40	ea	430	39.80	43.32
type M-2-40	ea	120	47.15	40.92
type V-4-40	ea	5	51.60	61.32
type W-3-40	ea	375	55.05	68.52
type HH-2-40	ea	25	38.85	58.92
type WW-3-40	ea	45	55.00	68.52
Portable emergency lighting units, compl, type AB-25	ea	15	76.00	101.40
Low voltage drop light units, compl, type AG-50	ea	20	53.05	218.40
Single phase, 480-120-240 V, lighting transformers 10KVA	ea	3	179.00	254.40
25 KVA	ea	35	378.70	474.00
37 5 KVA	ea	10	501.00	597.60
10 amp, 250 V, duplex receptacles	ea	500	5.55	2.76
20 amp, 600 V, outdoor receptacles	ea	510	14.70	19.44
20 amp, 125 V, single-pole tumbler switches	ea	25	7.25	5.16
20 amp, 125 V, 3 way tumbler switches	ea	25	8.40	6.36
30 amp, 600 V, 2 pole fused disconnect switches	ea	3	36.00	39.60
60 amp	ea	35	36.40	50.64
100 amp	ea	10	48.50	74.40
30 KW, 120-208 V, 3 phase emergency lighting engine-generator sets with battery control panel	ea	14	6,043	7,608
Trickle chargers	ea	10	78.30	73.20
10 amp, 125 V, tumbler switches for movable steel partitions	ea	110	8.05	5.16
10 amp, 250 V, duplex receptacles for movable steel partitions	ea	185	8.10	3.00
10 amp, 125 V, 3-way tumbler switches for movable partitions	ea	5	10.50	6.36
60 amp, 600 V, 3-pole fused disconnect switches	ea	4	45.00	53.04

Bids: 5-21-53

Heating, ventilating & air-conditioning

		1 C	2
1 C	Mechanical Installations, Inc.	$348,765	
2	Astrove Plumbing & Heating Corp.	373,494	
5	Eugene J. Brandt & Co., Inc.	528,648	

Bids: 5-14-53

Item	Unit	Quantity	Unit Prices 1 C	2
Piping, valves & specialities T & S house sta & sys contr room air cond sys	ls	1	$5,170	$7,500
boiler house mech control room air cond sys	ls	1	580.00	650.00
turbine house office section systems	ls	1	6,350	9,000
turbine house elec section systems	ls	1	8,620	15,000
T & S house utility section systems	ls	1	13,150	14,500
T & S house electrical section systems	ls	1	9,970	11,000
boiler house & turbine room systems	ls	1	36,000	55,500
Sheet metal ductwork T & S house sta & sys contr room air cond sys	ls	1	10,100	7,200
boiler house mech control room air cond sys	ls	1	1,250	1,050
turbine house office section systems	ls	1	9,920	8,700
turbine house electrical section systems	ls	1	17,700	18,000
T & S house utility section-supply systems	ls	1	18,200	16,500
T & S house utility section-exhaust systems	ls	1	9,300	9,100
T & S house, electrical section systems	ls	1	23,000	24,200
boiler house & turbine room systems	ls	1	9,340	5,900
Sheet metal ductwork no. 26 gage	sf	450	1.30	1.00
no. 24 gage	sf	3,500	1.40	1.18
no. 22 gage	sf	3,000	1.60	1.23
no. 20 gage	sf	2,500	1.70	1.39
no. 18 gage	sf	1,500	1.90	1.50
Non-magnetic ductwork of cross sectional area from 0-1 0 sq ft	lf	250	7.10	4.40
1 1-2 0 sq ft	lf	100	11.20	5.90
2 1-4 0 sq ft	lf	50	17.50	7.80
4 1-6 0 sq ft	lf	50	25.00	14.50
Supply grilles & santrols of sectional area from 0-1 0 sq ft	ea	0	19.00	15.50
1 1-2 0 sq ft	ea	10	57.00	19.60
2 1-3 0 sq ft	ea	10	44.00	32.75
3 1-4 0 sq ft	ea	10	59.00	43.00
4 1-6 0 sq ft	ea	10	85.00	80.25
Return registers & exhaust registers of sectional area from 0-1 0 sq ft	ea	10	12.00	9.80
1 1-2 0 sq ft	ea	10	20.00	12.60
2 1-3 0 sq ft	ea	10	27.00	19.95
3 1-4 0 sq ft	ea	10	22.00	25.00
4 1-6 0 sq ft	ea	10	53.00	44.15
Ceiling diffusers with stab & vol damp of sectional area from 0-1 0 sq ft	ea	10	52.00	38.50
1 1-2 0 sq ft	ea	10	81.00	63.60
2 1-3 0 sq ft	ea	10	115.00	100.15
3 1-4 0 sq ft	ea	10	150.00	120.80
4 1-6 0 sq ft	ea	10	220.00	157.85
Volume dampers	sf	80	7.00	1.80
Heating & ventilating systems turb house office sec	ls	1	8,100	10,200
turb house elec section	ls	1	16,700	20,200

(Continued on p. 134)

STOP
THAT LEAK FOR GOOD

9 SIKA COMPOUNDS TO END REPAIR PROBLEMS ON CONCRETE AND MASONRY

FOR PRESSURE LEAKS
(SIKA No. 2, SIKA No. 4A) Leaks are easily sealed on the exposed side with quick-setting SIKA mortar. It is not necessary to relieve pressure. SIKA No. 2 is used against heavy pressure or bleeders, SIKA No. 4A against seepage or moderate pressure.

FOR JOINTS OR CRACKS
(IGAS JOINT SEALER, SIKA CAULKING) IGAS JOINT SEALER seals even against pressure and continual movement. Will not sag, crack, dry out, become brittle or lose adhesion. In work above grade SIKA CAULKING is used where highest resistance to atmospheric change is desired.

FOR EXTERIOR REPAIRS
(SIKA-KOTE, SIKA TRANSPARENTS) SIKA-KOTE, a protective and decorative coating in 5 colors and white, prevents moisture penetration on concrete and masonry structures. SIKA TRANSPARENTS render brick structures waterproof and preserve their appearance.

FOR NON-LEAKING SURFACES
(SIKACRETE, SIKA-KOTE) Waterproof SIKACRETE mortar is used wherever cement coat work is indicated. Economical, easy to apply SIKA-KOTE prevents penetration of ground-moisture.

FOR GUNITING OR PRESSURE GROUTING
(SIGUNIT, SIKA No. 4, PLASTIMENT) For quick work against leaks or in tidal areas, SIGUNIT or mortar prevent washouts. SIKA No. 4 GROUT SIKA accelerates set, increases cohesion of mortar and adhesion of grout to rock.

Send Today For
"PLASTIMENT CONCRETE DENSIFIER"

This 8-page illustrated book discusses the theory and practice of obtaining a good concrete. Beginning with the gel mechanics of cement-water reaction, it describes the factors affecting cement hydration and basic quality of concrete, and how these factors can be controlled to reduce cracking and increase concrete hardness and impermeability.

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UNIT PRICES

(Continued from p. 133)

(supply) T & S house utility section	ls	1	7,000	9,400
(exhaust) T & S house utility section	ls	1	2,900	3,600
T & S house elec section	ls	1	11,000	11,200
boiler house turb room	ls	1	22,500	22,500
temp personnel facil	ls	1	5,700	5,000
Air conditioning system				
T & S house sta & sys control rooms	ls	1	14,900	14,800
boiler house mech control room	ls	1	2,600	2,500
Insulation				
T & S house sta & sys control room air cond system	ls	1	3,800	3,300
boiler house mech control room air cond system	ls	1	1,100	500.00
turb house office sec sys	ls	1	6,100	5,500
turb house elec sec sys	ls	1	2,500	1,500
T & S house util sec sys	ls	1	4,800	3,500
T & S house elec sec sys	ls	1	5,500	4,500
boiler house & turb room systems	ls	1	4,600	3,400
concealed ductwork, st fin	sf	2,000	0.66	0.60
exposed ductwork, st fin	sf	500	1.20	1.11
concealed ductwork, vapor barrier finish	sf	4,000	0.88	0.84
exposed ductwork, vapor barrier finish	sf	500	1.40	1.30
Control equipment				
T & S house sta & sys control room air cond sys	ls	1	950.00	1,800
boiler house mech control room air cond sys	ls	1	550.00	600.00
turbine house office sec system	ls	1	1,400	1,800
turbinr house electrical section system	ls	1	2,800	4,200
T & S house utility sec sys	ls	1	790.00	1,300
T & S house elec sec sys	ls	1	1,500	2,100
boiler house & turbine room systems	ls	1	3,000	5,700

Plumbing

1 C Fein Schlossberg, Inc., New York, N. Y. . . . $273,185
2 Astrove Plumbing & Heating Corp., L. I. C., N. Y. . . . 278,533
4 H. Sand & Co., Inc., New York, N. Y. . . . 405,085

Bids: 5-14-53

Item	Unit	Quantity	Unit Prices 1 C	2
Cast iron B & S pipe, 3"	lf	50	2.36	10.00
4"	lf	180	2.70	20.00
6"	lf	140	3.92	21.50
8"	lf	100	7.14	23.00
10"	lf	45	12.67	25.00
12"	lf	40	16.81	27.00
Galvanized wrought iron pipe				
¼"	lf	20	1.18	1.00
½"	lf	3,700	1.59	1.50
2"	lf	2,000	2.14	1.90
2½"	lf	660	3.25	3.00
3"	lf	510	4.08	4.40
4"	lf	3,400	5.97	7.00
6"	lf	1,000	9.69	9.00
8"	lf	610	13.56	13.00
10"	lf	350	19.63	20.00
Black wrought iron pipe				
¾"	lf	60	0.48	1.00
1"	lf	30	0.79	1.50
1½"	lf	20	1.13	1.60
2"	lf	270	1.14	1.80
Black steel pipe				
1"	lf	150	0.37	1.00
1½"	lf	650	0.72	1.40
Copper tubing				
¾"	lf	550	4.05	1.00
1"	lf	1,200	4.08	3.08
1½"	lf	2,300	4.45	4.00
1¼"	lf	2,200	5.02	4.20
1½"	lf	50	5.43	4.60
2"	lf	1,600	6.15	4.70
2½"	lf	950	6.23	5.50
3"	lf	500	7.05	6.00
3½"	lf	1,200	9.35	6.30
4"	lf	210	11.56	6.80
6"	lf	660	14.19	9.50
Bronze gate valves	lf	120	30.14	12.00
¾"	ea	50	6.69	8.00
1"	ea	15	8.63	15.00
1¼"	ea	20	9.62	17.00
1½"	ea	20	12.25	18.00
2"	ea	20	14.38	20.00
2½"	ea	15	18.75	30.00
3"	ea	10	29.38	35.00
Iron body gate valves, 3½"	ea	7	41.87	50.00
Iron gage valves	ea	3	55.70	70.00
¾"	ea	10	8.50	8.00
1"	ea	5	11.31	15.00
2"	ea	5	17.06	20.00
Iron body gate valves				
4"	ea	15	64.38	100.00
6"	ea	4	107.50	130.00
Bronze globe valves				
¾"	ea	5	6.85	5.00
1"	ea	5	9.75	7.00
1½"	ea	5	11.88	9.00
2"	ea	5	18.94	18.00
Bronze check valves				
¾"	ea	5	6.85	5.00
1"	ea	5	9.06	7.00
1½"	ea	5	10.44	10.00
2"	ea	5	15.75	15.00
2½"	ea	5	20.43	25.00
3"	ea	5	30.00	30.00
Iron body check valves, 4"	ea	5	46.25	40.00
Bronze spring loaded check valves, 2"	ea	5	41.56	90.00
3"	ea	2	67.50	20.00
4"	ea	3	86.25	30.00
Bronze pressure reducing valves	ea	7	101.25	40.00
1"	ea	2	45.85	20.00
1½"	ea	2	70.63	25.00
2"	ea	2	101.63	50.00
2½"	ea	2	151.87	60.00
Roof drains, type A-8	ea	6	22.50	20.00
type A-4	ea	18	22.50	25.00
type B-3	ea	1	20.00	20.00
type B-4	ea	11	26.25	25.00
type C-2	ea	1	30.00	20.00
type D-2	ea	2	18.13	15.00
type E-3	ea	3	30.62	20.00
type E-1	ea	4	31.25	25.00
type F-4	ea	45	150.00	150.00
type G-4	ea	2	31.25	30.00
type H-4	ea	15	26.25	25.00
type I-4	ea	2	31.25	25.00
type J-3	ea	6	30.63	25.00
type J-4	ea	30	31.25	25.00
Type K-4 revolving door drains	ea	2	375.00	400.00
Watl access cleanouts, 4"	ea	1	10.00	40.00
6"	ea	1	16.88	50.00
Flat roof vent connections 3"	ea	1	36.25	30.00
4"	ea	11	37.50	35.00
6"	ea	1	43.75	40.00
House traps, 3"	ea	1	11.00	5.00
4"	ea	4	12.50	10.00
6"	ea	2	20.00	12.00
8"	ea	2	62.50	30.00
10"	ea	1	96.25	50.00
Fresh air inlets, 4"	ea	5	16.25	10.00
6"	ea	2	21.25	20.00
Wall hydrants	ea	4	35.62	20.00
Hosebibs	ea	50	13.44	10.00
¾" inlet ¾" outlet air valves	ea	15	12.50	10.00
¾" inlet ½" outlet air valves	ea	8	9.75	5.00
Automatic mixture control valves, unit M-A	ea	6	107.21	70.00
M-B	ea	1	114.00	100.00
M-C	ea	3	109.38	100.00
M-D	ea	1	259.38	250.00
M-E	ea	1	280.62	325.00
M-F	ea	7	306.87	400.00
M-G	ea	2	388.13	500.00
Water closets, blowout type	ea	24	117.50	140.00
siphon jet type	ea	17	116.87	150.00
Urinals, blowout type	ea	26	115.00	130.00
washdown type	ea	11	107.50	130.00
Lavatories	ea	80	77.50	125.00
Service sinks	ea	9	118.75	150.00
Shower fixture units	ea	74	56.25	75.00
Self-closing shower valves	ea	1	50.00	75.00
Washing tab units	ea	1	102.50	150.00
Washing machine	ls	1	4,407	4,200
Drying tumbler	ls	1	2,050	2,000
Extractor	ls	1	2,048	2,000
Truck tubs	ea	2	190.00	250.00
Truck baskets	ea	4	56.25	60.00
Domestic water supply tank	ls	1	11,929	8,200
Steam hot water storage heaters, 2240 gal cap	ea	2	5,559	5,000
Steam instantaneous hot water booster heaters	ea	1	501.00	600.00
Elec hot water heaters, 80 gallon capacity	ea	1	1,095	1,000
Waste oil tank	ls	1	6,162	3,000
Two (2) domestic water supply pumps	ls	1	1,984	4,000
Two hot water circulating pumps	ls	1	636.56	1,300
Sump pumps, no. 1-1 & 1-2	ls	1	1,434	3,000
no. 2-1	ls	1	778.75	1,000
no. 3-1 & 3-2	ls	1	1,114	2,200
no. 4-1 & 4-2	ls	1	1,114	2,200
no. 5-1	ls	1	861.25	1,000
Elevator sump pit ejector	ea	3	50.50	50.00
Domestic water meter	ls	1	758.75	700.00
Copper drip pans	sf	400	5.78	2.50
Lead shower pans	sf	270	2.45	4.00
Water hose for boiler & turbine houses	ea	7	41.88	24.00
Water hose for fan rooms & air cond rooms	ea	4	38.13	13.00
Rubber air hose, ½"	ea	10	37.80	24.00
¾"	ea	5	32.20	22.00
New city water service connection	ls	1	15,711	25,294
Transformer water cooling system	ls	1	22,338	20,435

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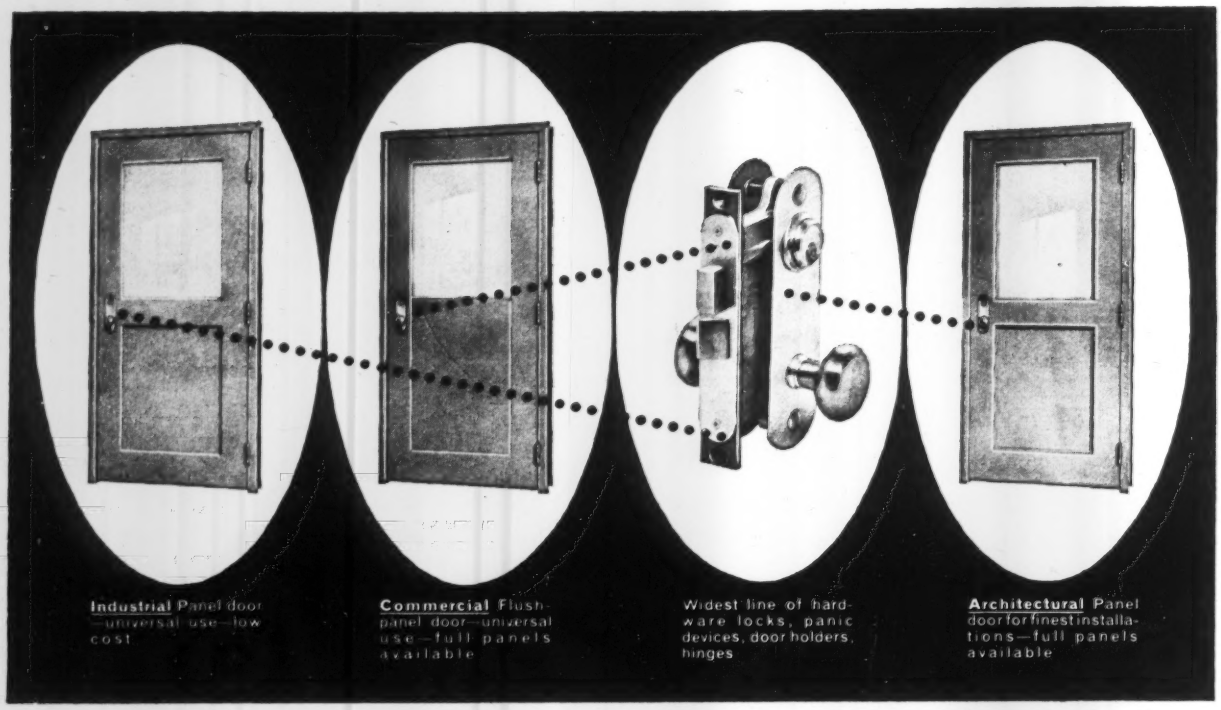
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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Complied by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—BUILDINGS

Conn., Darien—SCHOOL—B.A. 7/24—Town, Bd. Educ., S. P. Marland Jr., supt. Schools, elementary school adjacent to Junior High School, $495,000. Plans deposit $25, refundable. Ketchum-Gina & Sharp, 227 E. 44 St., New York, N. Y., archts. CD 6/10, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Adams Constr. Co., 53 Blanche St., Cambridge, Mass. LB. $251,845, est. $250,000. hy., sidewalk, etc., CHELSEA, MASS. City, City Hall, Chelsea, Mass.

▲ **Farina Bros. Co.**, 429 Watertown St., Newton, Mass. CA. $2,385,997, est. $2,500,000. Contr. SAMB 72, Proj. PR-2, constr. hangar, appurtenant facilities, American Air Lines Logan International Airport, EAST BOSTON, MASS. State, State Airport Management Bd., Gen. Boutwell Bldg., Logan International Airport, East Boston, Mass. CD 6/16, under LB.

R. Zoppo Co., 842 Boston Providence Hy., R. 1, Norwood, Mass., LB. $976,817, Item 1; $971,800, Item 2; $941,700, Item 3, sewage disposal facilities, U. S. Naval Base, Spec. 34823, NEWPORT, R. I. P. Wks. Office, 495 Summer St., Boston, Mass. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. Bids June 29. CD 6/17.

BUILDINGS

LOW BIDS AND CONTRACTS

W. J. Quinn Co., 16 Edson St., Longmeadow, Mass. CA $317,500, est. $300,000. Parochial SCHOOL, CHICOPEE, MASS. Assumption Parish, Rev. A. B. Auge, pastor, c/o R. C. Diocese of Springfield, Most Rev. Christopher J. Weldon, DD bishop, Chancery Office, 62 Elliot St., Springfield, Mass. Bids June 23. CD 6/17.

▲ **Joseph Rugo, Inc.**, 581 Boylston St., Boston, Mass. LB. $2,027,000. P-M 18 Contr. 1, Medical INFIRMARY, State Hospital, DANVERS, MASS. State, Dpt. Mental Health, 15 Ashburton Pl., Boston, Mass. Bids July 2. CD 6/8.

E. Turgeon Constr. Co., 42 Weybosset St., Providence, R. I. CA $811,734. HOSPITAL (maternity wing), FALL RIVER, MASS. St. Anne's Hospital, 795 Middle St., Fall River, Mass. CD 5/26, under LB.

▲ **Grande & Son, Inc.**, 425 A Broadway, Everett, Mass. CA. $1,522,214. High SCHOOL, Main St., WAKEFIELD, MASS. Town, High School Bldg. Comm., Town Hall, Wakefield, Mass. Bids June 11, awarded June 30. CD 6/16, under LB.

Dimeo Constr. Co., 75 Westminster St., Providence, R. I. CA. $815,200, est. $800,000. 2 elementary SCHOOLS, Killey Ave. near Church and Warwick and Sherwood Aves., WARWICK, R. I. City, School Comm., Charles B. McKay, secy., Warwick, R. I. Bids June 25. CD 6/30, under LB.

▲ **John Zandonella**, 70 Chase St., Bridgeport, Conn. CA $1,188,500, est. $800,000. Samuel Johnson Elementary SCHOOL, Chopsey Hill Rd., north of Trumbull Rd., BRIDGEPORT, CONN. City, Bd. Educ., 804 Main St., Bridgeport, Conn. CD 7/1, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Md., Baltimore**—Bids in July—City, Dpt. P. Wks., Bureau Water Supply, Municipal Office Bldg., Zone 2, constr. Ashburton filtration plant. Plans deposit $100. Whitman, Requardt & Assoc., Loyola Bldg., Charles and Preston Sts., Zone 1, engrs. CD 8/28.

BIDS ASKED—BUILDINGS

▲ **Md., Towson**—SCHOOL—B.A. 7/21—Baltimore Co., Bd. Educ., Aigburth Rd., 3 story, brick, block, steel Kenwood Senior High School, Stemmers Run, Essex. $3,000,000. Plans deposit $60. Bids 5/5 rejected. Taylor & Fisher, 1012 N. Calvert St., Baltimore, archts. CD 5/13, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,

Glasgow, Inc., Church and Waverly Rds., Glenside, Pa. CA. $3,021,507, constr. 3.32 mi. Delaware River extens. (Sec. 32-B) of Pennsylvania Turnpike, Montgomery Co. Bids May 25, awarded June 28. CD 5/28, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,

James D. Morrissey, Inc., 9119 Frankford Ave., Phila. 14, Pa., CA. $6,058,953. constr. structures, grading, drainage and paving Sect. 34-A Delaware River Ext. 3.55 mi. and constr. structures, grading, drainage, paving Sect. 34-B, Delaware River Ext. 3.07 mi. Bucks Co. Bids June 16, awarded July 2. CD 6/18, under LB.

H. T. Osburn & Co., Franklin, Pa., CA. $855,555, channel rectification, Allegheny River and tributaries, Coudersport, Potter Co., PENNSYLVANIA. State Dpt. Forests & Waters, 405 Education Bldg., Harrisburg, Pa. Bids May 27, awarded June 28. CD 6/2, under LB.

▲ **Dravo Corp.**, Neville Island, Pittsburgh 25, Pa., CA. $1,123,600, development of river wall and wharf at Point State Park, PITTSBURGH, PA. State Dpt. Property & Supplies, 319 N. Front St., Harrisburg, Pa. Bids June 5, awarded June 30. CD 6/11, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Palmer Terrace Apartments**, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. $1,500,000. two story co-operative APARTMENT project for 192 families, 9-acre tract bounded by Palmer, Rockland and Delancy Aves., MAMARONECK, N. Y.

▲ **Edmondale Building Co.**, 5 N. Guilford Ave., Baltimore, Md. Owner Builds, $1,000,000. one hundred 2 story, brick HOUSES, St. Agnes Lane, near BALTIMORE, MD. Hal. A. Miller, 2118 Maryland Ave., Baltimore, Md., archt.

▲† **Combustion Engineering Co.**, 1603 K St. N.W., Wash., D. C. CA. $1,099,924. steam generating unit Naval Powder Factory, NOY 78850, INDIAN HEAD, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 18, awarded June 30. CD 6/1.

▲† **Norair Engineering Corp.**, 1122 22 St. N.W., Wash., D. C. CA. $2,169,860. POWER PLANT bldg., installing equip. Naval Powder Factory, NOY 78860, INDIAN HEAD, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 22, awarded June 30. CD 6/1.

H. L. McAllister, 11422 Old Bladensburg Rd., Silver Spring, Md. LB. $391,450. West Rockville Elementary SCHOOL, ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md. A. Hamilton Wilson, 1022 20 St. N.W., Wash., D. C., archt. CD 2/2.

SOUTH

BIDS ASKED—BUILDINGS

S. C., Lancaster—SCHOOL—B.A. 7/23—Lancaster Co. Bd. Educ., Lancaster, Southside School. $300,000. Plans deposit $50. Lockwood Greene Engineers, Spartanburg, archts. CD 4/15.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Doyle & Russell**, Central Natl. Bank Bldg., Richmond, Va., CA $2,778,000, aviation accessories overhaul bldg. at U. S. Naval Air Station, NOY 73601, NORFOLK, VA. P. Wks. Office, Headquarters, Fifth Naval Dist., U.S. Naval Base, Norfolk 11, Va. Bid June 2. CD 6/8, under LB.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 5,

Ralph E. Mills Co., 410 Ann St., Frankfort, Ky. LB $1,438,765. Contr. 20, grading, drainage 3.18 mi. relocation, 0.18 mi. existing Hw. substructure Bridge No. 9, Mercer Co. Bids June 30. CD 6/16.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 5,

S. J. Groves & Son, Wesley Temple Bldg., Minneapolis, Minn., LB $4,275,639, Contr. 28;

Suber & Co. and R. G. Foster & Co., Whitmire, S. C. LB $1,584,460, Contr. 28C, grading, drainage 6.7 mi. substructure for 9 bridges, 3 reim.-con. box culverts, Kanawha Co. Bids June 30. CD 6/10.

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 5,

L. S. Coleman, 1st Natl. Bank Bldg., St. Albans, W. Va. CA $700,074. Contr. 28A, grading, drainage, substructure, 1.4 mi. Kanawha Co.;

Boso & Ritchie, Ravenswood, W. Va., CA $1,059,750. Contr. 28B, grading, drainage, substructure 2.5 mi. Kanawha Co.; CA $689,297, Contr. 28D, grading, drainage, 1.7 mi. Kanawha Co. Grand total $2,449,121. Bids June 30, awarded July 2. CD 7/6, under LB.

† **Southern Constr. Co.**, Daniel Field, Augusta, Ga. CA $449,997, bachelor officers quarters, U. S. Naval Supply School, NOY 76191, ATHENS, GA. P. Wks. Office, Naval Base, Charleston, S. C. Bids June 26. CD 6/4.

† **United Enterprises, Inc.**, 2845 N. Roman St., New Orleans, La., CA $524,000. rehabilitation of bldgs., Group 1, U.S. Naval Supply School, NOY 76189, ATHENS, GA. P. Wks. Office, Naval Base, Charleston, S. C. Bids June 26. CD 6/4.

† **Mathis Constr. Co.**, Athens, Ga., CA $424,724, rehabilitation of bldgs., Group 2, U. S. Naval Supply School, NOY 76188, ATHENS, GA. P. Wks. Office, Naval Base, Charleston, S. C. Bids June 26. CD 6/8.

Boyle Constr. Co., Sumter, S. C. CA $245,825. Sanitary sewer imprvs., AUGUSTA, GA. City, City Hall, Augusta, Ga. Bids June 25. CD 6/17.

City, City Hall, Dawson, Ga. Owner Builds. $90,000, street imprvs., DAWSON, GA.

Kirkpatrick & Pierson, Inc., Gainesville, Fla., CA $371,000, stadium addns. at University of Florida, GAINESVILLE, FLA. State Bd. Control, Education Bldg., Florida State University, Tallahassee, Fla. Bids Jne 18. CD 6/25 under LB.

▲† **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex., CA $3,045,000, two maintenance hangars Denver Type) at U. S. Naval Air Station (Forrest Sherman Field), PENSACOLA, FLA. Dpt. Navy, P. Wks. Officer, 6th Naval Dist., U. S. Naval Base, Charleston, S. C. CD 6/12, under LB.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

W. R. Aldrich Co., 2493 Baywood Ave., Baton Rouge, La. CA $574,110. c. conc. 6.6 mi. Glencoe-Baldwin Hy., State Rte. 59, DeSoto Parish. CD 5/6, under LB.

T. L. James & Co., P.O. Drawer, 8, Kenner, La. LB $569,554. drainage pumping plant at former jct. of Bayou Lafourche with Mississippi River, DONALDSONVILLE, LA. State Dpt. P. Wks., Baton Rouge, La., Bids Jun 30. CD 6/11.

† **Southern Builders**, P.O. Box 1815, Shreveport, La. LB $271,998. armament electronics repair shop at Barksdale Air Force Base, Inv. 53-45, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids June 26. CD 6/17.

† **James F. O'Neil Co.**, 1501 S. Rendon St., New Orleans, La. CA $142,432. production piping,

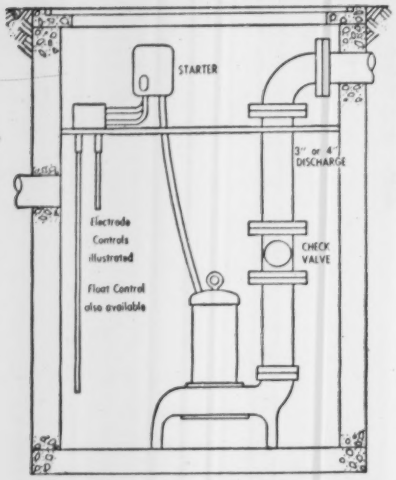
W. L. Ratcliffe Co., 104 Edwards St., Shreveport, La. CA $327,950. production wiring, Louisiana Ordnance Plant, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark.

▲† **C. F. Rule Constr. Co.**, 217 13 Ave. N., Nashville, Tenn. CA $2,543,903, est. $2,440,642. pumping plant flood protection Beargrass Creek, Jefferson Co., KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 23, awarded June 30. CD 6/25 under LB.

Penker Constr. Co., 1030 Summer St., Cincinnati, O. CA $734,392, est. $750,000. Eighth Street pump station, appurtenances, sewers in conjunction therewith Patton Street pump station, appurtenances, sewers

weil SUBMERSIBLE

NON-CLOG SCREENLESS SEWAGE EJECTOR



Pumps ALL Sewage

From Lift Stations — From Disposals — From Laundry Trays — All Household Sewage — All Industrial Sewage — even RAGS.

The Submersible handles anything that will pass through sewage lines.

Designed

- **To operate UNDERWATER**
- **for BELOW floor level installation**
- **for installation in LIMITED SPACE**
- **for DUST-PROOF operation**

Capacities: 35 to 300 G.P.M. Heads to 45 feet

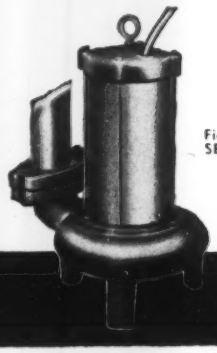


Fig. SE 860

Underground Lift Station with Submersible Pump in wet pit. Requires no pump house to mar the landscape. Duplex units furnished with alternators.

For Heavy Duty Installation—4" discharge—½ to 3 HP. See Bulletin SE 860. Max. dimensions: Dia. 23", Hgt. 28".

weil PUMP CO.

1528 NORTH FREMONT ST., CHICAGO 22

JACKSON ELECTRIC FLEXIBLE-SHAFT CONCRETE VIBRATOR

MODEL FS-150A

WITH EVERYTHING THE GENERAL CONTRACTOR COULD WANT

POWER GALORE:
2½ HP (continuous duty rating) Universal Motor provides more than ample power for uninterrupted placing of the stiffest mixes using the maximum length of shaft.

LIGHT SOCKET OPERATION:
Wherever either 115 volt, 60 cycle single phase AC or Direct Current is available, this relatively inexpensive vibrator will do a bang-up job of concrete placement.

28 FOOT REACH:
Available with any length of shaft up to 28 feet. Maximum length makes hard-to-get-to places readily accessible — saves time by making frequent changes of vibrator location.

CONVENIENT — RUGGED CONSTRUCTION:
Double grip, skid-base handle with finger-tip control switch. Weighs only 50 lbs. Finest, smooth-running flexible shaft and fittings — built to take the most severe usage.

GRINDING:
Countershaft attachment for quick conversion to wet or dry concrete rubbing.

HIGH FREQUENCY — 3 VIBRATOR HEADS:
8,000 to 10,000 VPM and availability of three vibrator heads assure rapid as well as thorough consolidation of the stiffest mix concrete under all conditions.

See this outstanding general-purpose electric vibrator at your Jackson Distributor or write for complete facts.

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON, MICHIGAN

in conjuncion therewith, NEWPORT, KY. Sanitation Dist. No. 1, Campbell and Kenton Counties, 37 E. 4 St., Newport, Ky. Bids June 9, awarded July 1. CD 6/16.

▲ **TENNESSEE**—State Hy. Dpt., Cotton States Bldg. Nashville,

Knoxville Constr. Co., River Terminal Rd., Knoxville, Tenn., LB $576,512, c. conc. or bit. materials paving 11.593 mi. sect. State Rte. 34, from Knox Co. line and extending to Jefferson City, Proj. No. FI-034-1-(19), Jefferson Co.;

Wright Contg. Co., 504 25th Ave., Columbus, Ga., LB $535,461, c. conc. or bit. materials paving 5.561 mi. sect. State Rte. No. 2, from 0.5 mi. south of Martin Springs and extending towards Monteagle, Proj. No. FI 002-2-(19), Marion Co. Bids June 26 CD 6/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Parham-Darr Constr. Co., High Point, N. C. CA $342,000. White Oak, Silverdale and Swansboro SCHOOLS, JACKSONVILLE, N. C. Onslow Co. Bd. Educ., Jacksonville, Fla.

Claussen & Webster, 1394 Gwinnett St., Augusta, Ga. CA $350,000. CLASSROOM-DORMITORY, AIKEN, S. C. Aiken Preparatory School, Aiken, S. C.

Spong Constr. Co., 608½ Harden St., Columbia, S. C. CA $357,642, Vance Negro SCHOOL, ORANGEBURG, S. C. School Dist. 3, Orangeburg, S. C.

Southern College, Lakeland, Fla. Owner Builds. $500,000. SCIENCE BLDG., LAKELAND, FLA.

▲ Stobs Bros. Constr. Co., 7010 N. E. 4 Court, Miami, Fla., CA. $1,308,204, HIGH SCHOOL, Hialeah, MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 N. W. 2 St., Miami, Fla. Bids June 24. CD 7/1, under LB.

▲ † United Builders, Inc., 214 N. Broadway, Shawnee, Okla., and Southwest Constructors, Inc., 20 N.E. 26 St., Oklahoma City, Okla. CA $1,603,343. WAREHOUSES, HARAHAN, LA. General Services Admin., Public Bldg. Service, 19 and F Sts. N.W. Wash. 25, D. C. Bids May 8, awarded June 30. CD 5/14, under LB.

▲ † Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa., CA $616,700, furnish, fabricate, deliver and erect and test, if the govt. so selects, a second test cart; CA $1,114,000, furnishing, fabricating, delivering, erecting and testing removable test sections and operation equip.; CA $410,000, furnishing, fabricating, delivering, erecting and testing the fixed portion of the test sect. of the transonic circuit, foregoing for TRANSONIC TEST SECT. Arnold Engineering Development Center, TULLAHOMA, TENN. Grand total $2,140,700. U. S. Eng., Tullahoma, Tenn. Awarded June 29. CD 11/14/49.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ Ill., East St. Louis—B.A. 8/5—City, Alvin G. Field, mayor, City Hall, sewers in Lansdowne area. $1,900,000; in Edgemont-Oak Park area, $1,600,000. Horner and Shifrin, Shell Bldg., 1221 Locust St., St. Louis 3, Mo. engrs. CD 2/9.

Mich., Detroit—B.A. 8/11—City, George A. Shaffer, pres. Bd. Water Comrs., 735 Randolph St., water sys. bldgs., 230x300 ft. filter bldg., 48 sand filters, 1 story, 51x245 ft. office, 4 story, 30x140 ft. wash water bldg., 59x143 ft. switch house, 51x245 ft. weir chamber, two 50,000 gal. tanks, Northeast station Contr. NE-6. Plans deposit $75 refundable. L. G. Lenhardt, 735 Randolph St., ch. engr. CD 11/11/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—Ohio Turnpike Comn., 139 E. Gay St., Columbus, Zone 15.

Herkner Constr. Co., 5450 Hamilton St., Cleveland, O. CA, $5,261,336, Contr. C 16, one rein.-con. box culvert, west abutments of the twin bridges over Cuyahoga River (the balance of which are being constructed under Contr. C 15) and five steel beam bridges from three to six spans each, supported on rein. con. abutments and bents, the west abutments of the Cuyahoga River Bridge and the abutments of four of the steel beam bridges to be on steel piles and abutments of the other bridge and the bents of all of the steel beam bridges to be on spread footings, incl. grading, drainage, structures, paving approx. 4.9 mi. in Const. Sect. 16 of Ohio Turnpike Proj. 1, from approx. 45 ft. northwest of the county line between Summit and Cuyahoga Counties at Turnpike Centerline Station 998 plus 00 in Cuyahoga Co.; extending eastwardly to point approx. 580 ft. west of River Rd. at Turnpike Center Line Station 256 plus 14 in Summit Co. constr. engineers office bldg. and facilities on or near the site of the work, Cuyahoga and Summit Counties. Bids June 30. CD 7/2, under LB.

▲ OHIO—Ohio Turnpike Comn., 139 E. Gay St., Columbus, Zone 15,

D. W. Winkelman Co., Inc & D. W. Winkelman Carolina Co., Box 1366, Syracuse, N. Y., CA $8,973,237, 10 mi. roadway Sects. C-2 and C-3, Mahoning Co. Bids June 30. CD 7/2, under LB.

▲ ILLINOIS—State Div. Hys., Springfield,

S. J. Groves & Son Co., 1104 W. Reynolds St., Springfield, Ill., CA. $1,045,260, c.conc. 3.23 mi. and bit. resurf. 0.87 mach., 1 bridge, 1 culvert, channel change and earth approaches, U.S. 45, Johnson Co. Bids June 8, awarded July 3. CD 6/12, under LB.

▲ ILLINOIS—State Div. Hys., Springfield,

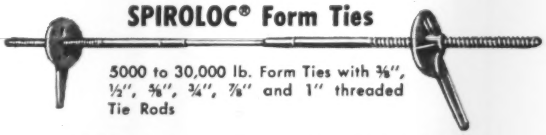
rejected bids June 8, bit. resurf. 4.61 mi. Ill. 47 Grundy Co., LB $105,852; bit. resurf. 11.99 mi. Ill.

(Continued on page 40)

UNIVERSAL CONCRETE FORMING EQUIPMENT

a complete line from 1 Source

SPIROLOC® Form Ties

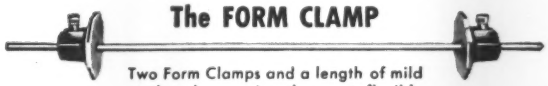


5000 to 30,000 lb. Form Ties with ⅜", ½", ⅝", ¾", ⅞" and 1" threaded Tie Rods

SPIROLOC Form Ties with CONE NUTS

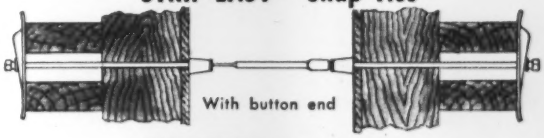
The only Form Tie with an absolutely positive spreader

The FORM CLAMP



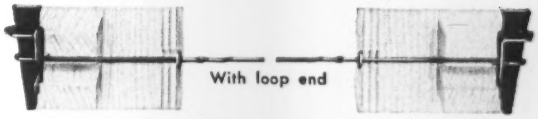
Two Form Clamps and a length of mild steel rod comprise the most flexible Form Tie

"STRIP-EASY"® Snap Ties



With button end

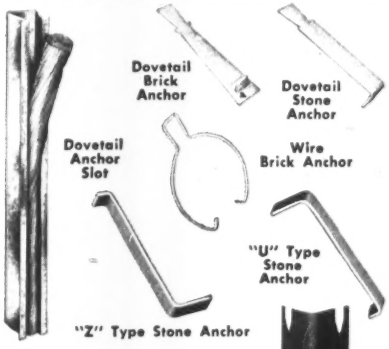
TWISTYE® Snap Ties



With loop end

The FORM CLAMP SURE GRIP Principle

Tremendous holding power is provided — assures tight forms



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- A Complete System — always Automatically accurate
- Form Any Concrete . . . Using Less Lumber, Labor and Material Than Any Other Method!
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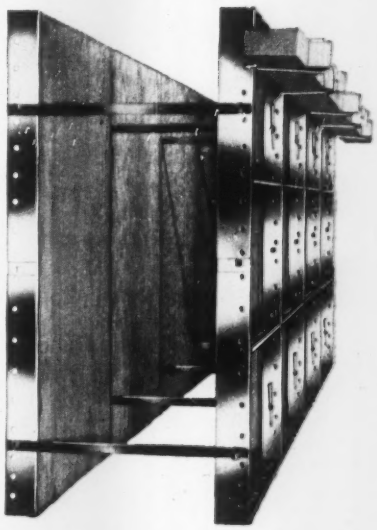

UNIVERSAL FORM CLAMP CO.

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CLEVELAND, OHIO, 24901 Lakeland Blvd. • **BALTIMORE, MD.,** 661 S. Monroe St. • **HOUSTON, TEXAS,** 2314 Preston Ave.

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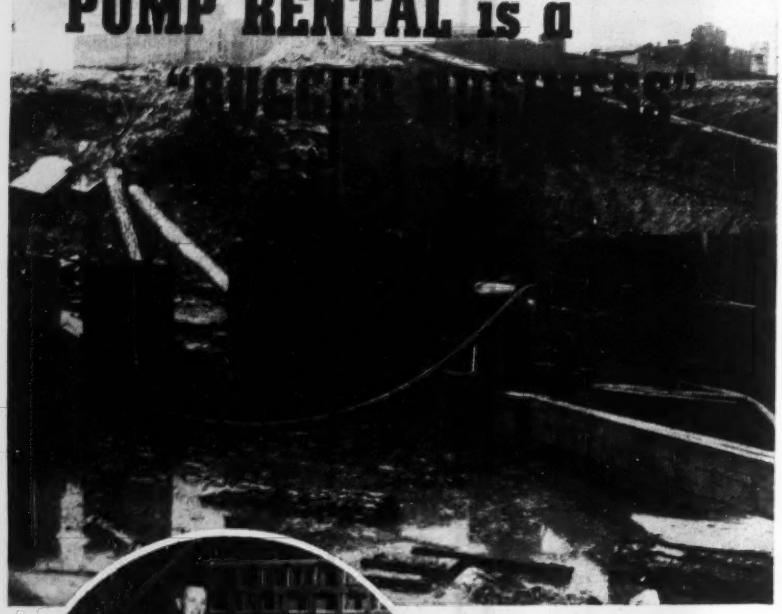


James King, General Manager of Birmingham Rock Bit Company says:

"We operate one of the largest pump rental fleets in Alabama, and our pumps are Marlow exclusively. We wanted pumps that would stay on the job longer without maintenance, that's why we chose Marlows. Our customers are well satisfied with Marlow Performance."

. . . *and* MARLOWS *are built to take tough on-the-job abuse!*

Sure! Marlow Pumps are built to take tough day-in-and-day-out use in the field without shutdown for maintenance or repair. That's why more and more rental fleet operators are *standardizing* on these dependable Marlow Engine-Driven Self-Priming Centrifugals, and that's why contractors, too, are *buying more Marlows than any other pump,* because Marlows have the features they demand.

Marlow builds models in all A.G.C. ratings from 4M to 200M, 1½" to 10"—plus many other models including the Famous MARLOW "Mud Hog".

For complete information on these modern self-priming centrifugal pumps, see your Marlow dealer or write for bulletin C-52.

337

- SIMPLE CONSTRUCTION
- LONGER LIFE
- LOWER MAINTENANCE
- FASTER PRIMING
- HANDLES TRASH
- HIGH EFFICIENCY
- LOW FUEL COST

MARLOW PUMPS RIDGEWOOD, NEW JERSEY
Branch Plants: DeQueen, Arkansas
West Chicago, Illinois
Other factories in France and England. Distributors and Dealers everywhere.

(Continued from page 138)

47, Grundy and Livingston Counties, LB $276,440; c. conc. 2.97 mi. and c. conc. base course widen. 1.39 mi. and one bridge on Ill. 1, in Iroquois Co., LB $490,027; c. conc. 4.81 mi. and three bridges, Ill. 1, Iroquois Co., LB $669,665; CD 6/12, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Charles M. Ziegler, comr., 222 Townsend St., Lansing.

Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. and **Charles J. Roger, Inc.,** 14836 Grand River St., Detroit, Mich. CA $509,514. c.conc. bit. conc. surf. 1.278 mi. John C. Lodge Expressway, power and signal facilities, BUI 82-128-C2 (BUI 404 55), Wayne Co.;

Detroit Asphalt Paving Co., 702 Transportation Bldg., Detroit, Mich. CA $504,543. asph. under seal, b. conc. 6.914 mi. US 24, M 58-21 CB-R, Monroe Co. CD 7/2, under LB.

† **L. W. Edison Co.,** 924 Floral Dr., Grand Rapids, Mich. CA $497,587. runways taxiways, ENG-20-064-53-65;

Peterson & Westberg, West River St., Cadillac, Mich. CA $441,340. housing facilities for National Guard, Eng-20-064-53-69, Alpena County Airport, ALPENA, MICH. U. S. Eng., 1900 Cadillac Tower, Detroit, Mich. Bids June 19. CD 6/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Frank Messer & Sons, Inc.,** 4612 Paddock Rd., Cincinnati, O., CA. $2,368,500, 296 two story, basmntless frame HOUSING, Beekman St., CINCINNATI, O. Cincinnati Metropolitan Housing Auth., Armory Ave., Cincinnati, O. Bids June 9, awarded June 24. CD 6/15, under LB.

▲ **F. & Y. Building Service, Inc.,** 319 E. Town St., Columbus, O., CA. $1,250,000. 1 story, brick, concrete, steel FACTORY for mfg. water coolers, COLUMBUS, O. Ebco Mfg. Co., 401 W. Town St., Columbus, O. CD 1/30/51.

▲ **A. J. Glaser Co.,** Muncie, Ind., CA $1,200,000. CHURCH edifice, educational unit and chapel, MUNCIE, IND. First Presbyterian Church, Muncie, Ind. Bids Apr. 1, awarded June 30. CD 3/20.

▲ **Snowberg Constr. Co.,** 108 E. Wood St., Bensonville, Ill. Owner Builds. $1,300,000. 120 HOMES, LOMBARD and BENSONVILLE, IND.

▲ **J. M. Brickman,** 8236 Lawrence Ave., River Grove, Ill. Owner Builds. $2,500,000. 200 HOMES in North West area in and adjacent to CHICAGO, ILL. Edward L. Verkler, 819 Ridge Ave., Peoria, Ill., archt.

▲ **Campbell, Lowrie, Lautermilch,** 400 W. Madison St., Chicago 6, Ill., CA. $1,000,000. chemical PLANT addn., JOLIET, ILL. Blockson Chemical Co., foot of Patterson Rd., Joliet, Ill. Johnson & Johnson, 111 W. Washington St., Chicago 2, Ill., archts. Awarded June 15.

▲ **Town & County Constr. Co.,** 1328 Glenview St., Glenview, Ill. Owner Builds. $1,400,000. 85 HOMES, NORTHFIELD, ILL.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Texas**—B.A. 7/31—U. S. Eng., Box 1229, Galveston, bulkhead for pipe line protection, principally driving round timber piles, steel piles, acct. Reserve Fleet Site on Neches River, near Beaumont, Inv. No. CIVENG-41-243-54-22. $100,000. CD 6/9/44.

BIDS ASKED—BUILDINGS

Tex., Houston—HOTEL—Bids Asked—Mrs. Willis Edwards, 3341 Sanders St., 60-room hotel, stores on portion 1st ground floor. $300,000. Leslie O. Jones, 3341 Sanders St., archt. R. L. Reid, 1705 W. Gray St., engr. CD 6/22.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul;

C. L. Nelson & Co., Brainerd, Minn. CA. $236,812. cleaning, sealing joints in c. conc. Maintenance Dists. 10, 14 and 16. Bids June 26. CD 6/11.

Pittsburgh-Des Moines Steel Co., 1014 Tuttle St., Des Moines, Ia. CA. $63,949. Divs. A and E;

John Rooff & Sons, Waterloo, Ia. CA. $154,304. Div. F, WW plant and sys., EVANSDALE, IA. City, Evansdale, Ia. Bids May 26. CD 5/21.

IOWA—State Hy. Comn., Ames,

Quad City Constr. Co., Rock Island, Ill. LB. $73,370. paving 0.683 mi., F 1021 (1), Clinton Co.;

Fred Carlson Co., Decorah, Ia. LB. $112,986. paving 0.65 mi. F 94 (6), Hancock Co.;

Central Engineering Co., 2531 Rockingham Rd., Davenport, Ia. LB. $343,966. paving 1.198 mi., U 927 (5), Scott Co.;

Cameron, Joyce Co., Keokuk, Ia. LB. $100,071, stabilized base bit. surf. 5.866 mi., SN 837, Lyon Co.; LB. $106,614, stabilized base bit. surf. 6.895 mi. S 2379 (1), Plymouth Co. Bids June 30. CD 6/18.

† **U. S. Eng.,** 1709 Jackson St., Omaha, Neb. rejected bids Mar. 25. POL and bulk storage facilities at Sioux City Municipal Airport, Inv. 25-066-53-140. SIOUX CITY, IA. LB. $895,000. CD 3/30, under LB.

▲† **U. S. Eng.,** 1709 Jackson St., Omaha, Neb. rejected bids Apr. 7, SAC control center, LB $6,456,570, entire proj., rigid pavement; LB $6,103,186, building only; LB $345,706, exterior work alone, Inv. 25-066-53-66, Offutt Air Force Base, FORT CROOK, NEB. CD 4/9, under LB.

▲† **Martin K. Eby Constr. Co.,** 610 N. Main St., Wichita, Kan. CA. $1,135,750. air national guard

facilities, Wichita Air Force Base, Eng-23-028-53-117, WICHITA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids June 26, awarded June 27. CD 6/12.

TEXAS—State Hy. Comn., Austin,
cancelled bids to have been opened July 14, grading, structures, base surf. 8.058 mi. Hy. FM 1766 and 2065, Proj. S 1204 (2) and S 1858 (1), Cass Co.; grading, structures, base and surf. 6.947 mi. Hy. FM 730, from S-24 in Decatur South, 7 mi. Control No. R 312-4-2, Wise Co. CD 6/19 and 6/30.

† MONTANA—Bureau P. Rds., Dpt. Commerce, P.O. Bldg., Missoula,
Morgenstern & Schett, Missoula, Mont. CA. $184,709. clearing, grubbing, grading, drainage 5.014 mi. North Fork Flathead River Rd., Proj. 210-B, Flathead Co. Bids June 24. CD 6/16.

† **Hoak Constr. Co.,** 621 63 St., Des Moines, Ia., LB. $418,685, est. $509,147, installing 360 mi. overhead ground wires on existing 115 kv transmission lines, Rio Grande Proj., Spec. Dc 3966, NEW MEXICO, Bureau Reclamation, Dpt. Interior, El Paso, Tex. Bids June 25. CD 6/3.

BUILDINGS

LOW BIDS AND CONTRACTS

D. Fanning, Madelia, Minn. LB $326,000. SCHOOL addns., alterations, DELAVAN, MINN. Bd. Educ., A. B. Whitehead, clk., Delevan, Minn. Bids June 26. CD 6/10.

† **U. S. Eng.,** 601 Davidson Bldg., Kansas City 8, Mo. cancelled bids to have been opened June 25, enlisted men's mess and service club, ENG-23-028-53-118, FORT LEONARD WOOD, MO. CD 6/16.

▲† **S. Patti Constr. Co.,** 1340 Admiral Blvd., Kansas City, Mo. CA $3,692,340. FEDERAL SUPPLY BLDG., KANSAS CITY, MO. General Service Admin., Pub. Bldgs. Service, 18 and F Sts. N.W., Wash 25, D. C. Awarded June 30. CD 6/4, under LB.

Mark Clemmer Investment Co., Inc., 401 Jefferson St., Amarillo, Tex., Own Forces. $325,000. HOUSING, AMARILLO, TEX. CD 6/24.

▲ **Sandy Hawthorne,** 2475 Gladys St., and **Willis Thomas,** 3220 French Dr., Beaumont, Tex., Own Forces. $550,000 40 DWELLINGS; $490,000, 35 DWELLINGS, BEAUMONT, TEX. CD 4/2.

S. A. Megert, Borger, Tex., postponed project indefinitely SHOPPING CENTER, BORGER, TEX Est. $300,000. CD 2/19.

Smith Constr. Co., 2151 Fort Worth Ave., Dallas, Tex., CA. $305,000, 34 DWELLINGS; CA $359,405, 42 dwellings, DALLAS, TEX. Vernon & Jas. Smith, 2151 Fort Worth Ave., Dallas, Tex. CD 6/25.

Cowdin Bros., 401 S. Haskell St., Dallas, Tex. CA $319,000. HOUSING, DALLAS, TEX. Henry Davis, 4603 Greenville Ave., Dallas, Tex. CD 6/26.

▲† **Robert E. McKee, General Contractor, Inc.,** P.O. Drawer 562, El Paso, Tex., CA $2,637,000, Fort Bliss ARTILLERY SCHOOL bldgs., Inv. 53-102, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 23. CD 7/1, under LB.

F. Avanzini, The Builder, 1113 Kinley Lane, Houston, Tex., Owner Builds. $350,000. Unit 2, 12 DWELLINGS, HOUSTON, TEX. CD 3/20.

Braes-Heights Center, Inc., 3738 Grammercy St., Houston, Tex., cancelled bids to have been opened June 27, 57,000 sq. ft. masonry SHOPPING CENTER, HOUSTON, TEX. Est. $850,000. CD 6/24.

Riedesel-Lowe Co., P.O. Box 914, Cheyenne, Wyo., LB $335,700, est. $300,000. 1½ story, L shaped, 100x145 ft. OFFICE, CASPER, WYO. Superior Oil Co., Mountain View, Casper, Wyo. Goodrich & Wilking, 226 E. 2nd St., Casper, Wyo. engrs.-archts. Bids June 22.

Gerald H. Phipps, Box 2068, Denver, Colo. CA $449,719. general contract 1 story, brick Goldrick Grade SCHOOL addn., DENVER, COLO. School Dist. No. 1, City & County of Denver, 414 14 St., Denver, Colo. Bids June 17, awarded June 25. CD 6/3.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Calif., Los Angeles—B.A.** 8/12—City, City Hall, LaCienega and San Fernando Valley Relief Sewer Unit A, 26,400 ft. 5 ft. 6 in. to 8 ft. 3 in. semi elliptic sect. $3,000,000, Lloyd Aldrich, city engr. CD 10/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

UTAH—State Road Comn., State Capitol, Salt Lake City,
Wilkinson Constr., Morgan, Utah, CA $98,804. 1.7 mi., 63,000 cu. yd. unclassified excav., Laketown Southeasterly, Rich Co.;

Thorn Constr. Co., P.O. Box 111, Springville, Utah, CA $124,986. 13,700 tons plant mix bit. surf., and 201,000 gal. bit. material, Pleasant Grove and American Fork, Utah Co.;

Gibbons & Reed, 2124 Washington Blvd., Ogden, Utah, CA $100,285, 10,500 tons plant mix bit. surf. Type A, 19,800 sacks portland cement, Type 1, U.S. 91 and North Bountiful, Davis Co. Grand total $324,075. Bids June 30.

▲ **Union Pacific R. R.,** W. C. Perkins, ch. engr., 1416 Dodge St., Omaha 2, Neb. Owner Builds. $4,000,000. yard tracks and facilities, OGDEN, UTAH.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,
Ukropina-Polich-Kral & John R. Ukropina, Box 105, South San Gabriel, Calif. LB $1,174,577 rein.-con.,

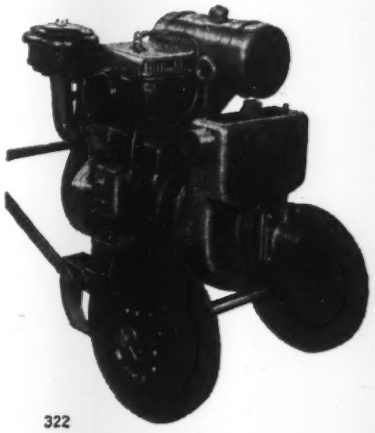
(Continued on page 144)

Get More with a MARLOW

Only Marlow Self-Priming Centrifugal Pumps Give You *All 12* Superior Features for *Better Pumping Performance!*

AIR-COOLED ENGINE-DRIVEN SELF-PRIMING CENTRIFUGAL PUMPS

FEATURES	MARLOW	PUMP "A"	PUMP "B"	PUMP "C"	PUMP "D"	PUMP "E"
1. Non-Recirculatory Positive Priming	YES	YES	NO	YES	NO	NO
2. Self-Cleaning	YES	YES	NO	YES	NO	NO
3. Low Suction Inlet	YES	NO	NO	NO	YES	NO
4. Horizontal Discharge	YES	NO	YES	YES	YES	YES
5. Metal - to - Metal Grease - Lube Seal	YES	YES	YES	YES	YES	YES
6. Vacuum Gauge Plug	YES	NO	NO	NO	YES	YES
7. Discharge Gauge Plug	YES	NO	NO	NO	YES	NO
8. Supplied Complete with Male Fittings	YES	NO	NO	NO	NO	NO
9. Impeller Keyed to Shaft	YES	NO	NO	NO	NO	NO
10. Only One Gasket	YES	YES	NO	YES	NO	NO
11. Replaceable Wearing Parts	YES	YES	YES	YES	YES	NO
12. Convertible Base and Chassis	YES	NO	YES	YES	NO	NO



322

Yes! Marlow, and Marlow *alone*, gives you *all* the features in dependable engine-driven, self-priming centrifugal pumps that bring you high efficiencies and low operating and maintenance costs. That's why contractors are buying *more Marlows than any other pumps!*

For complete information on how Marlow can help give you more pump performance – at less cost – see your Marlow dealer or write for Bulletin C-52.

MARLOW PUMPS RIDGEWOOD, NEW JERSEY
Branch Plants: DeQueen, Arkansas; West Chicago, Illinois
Other factories in France and England
Distributors and Dealers everywhere

(*Advertisement*)

LeTourneau pictures of the month . . .

NO TRACKS, $4500 SAVED YEARLY

— After 2 seasons of land-clearing in Florida sand, Zinke-Smith, Inc, Pompano Beach, say their Tournatractor tires show no wear at all. "Tracks," reports William Zinke, Co. Pres, "last only about 3 to 4 months in this sand. We have eliminated replacement of crawler pins, bushings and rollers which takes a good 2 days — and costs about $1500 each time."

BUSY FOR THE CITY — Piling garbage and trash at Longview, Texas, Tournatractor rolls constantly over scrap metal and glass without tire failure. Unit, selected after open competition with crawler-tractors, spreads, compacts, and covers all city's garbage in 2½ hrs daily. (City population: 25,000.) In spare time, it has cleared 40 acres of timber and brush for future dumping. It also drives over city streets to handle such assignments as grading parks, digging drainage ditches, and maintaining roads. "Rig has plenty of power and speed," says Operator J. F. Harkness. "It's so easy to operate I can do a full day's job without being tired out."

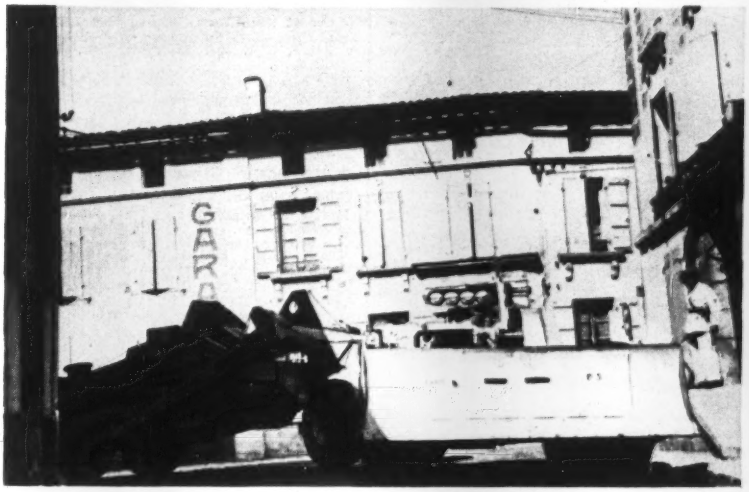
BUCKS 100 MPH WIND — 7,000 ft up on Black Mountain in Wyoming, this Tournatractor is licking icy 60 to 100 mph gales and 40% grades while building access roads and leveling drill sites for oil exploration. Owner Leon Hitshew reports Tournatractor is the "only tractor that can do the job". Its big rubber tires roll easily over boulders which cause crawler treads to slip and crawler steering to become difficult. Operator A. D. Clay has more comfort on a Tournatractor, too. He wears an electrically-heated flying suit which he plugs into rig's electric-control system for continuous warmth.

RIPS 20-IN. BLACKTOP — 186 hp Tournatractor tears up 2 to 4 layers (8 to 20 inches) of old blacktop preparatory to re-paving streets in Waunakee, Wis. Low-pressure tires do no damage to newly-set curbs, gutters. Like trucks, unit drives everywhere under its own power. "Saves $50 over transportation needed for every move of a crawler," reports Dane Cty Hwy Dept, owners.

13 YDS EVERY 40 SEC — Jack Darrough & Sons of Yuba City, California, used their Tournatractor with 5 C Tournapulls to help level 700 acres for a new orchard at Winters. Tournatractor push-loaded 13 pay yds of sandy loam every 40 sec, handled all 5 'Pulls on hauls as short as 800 ft. Rigs moved 70 loads hourly, did the job in 10 weeks.

(*Advertisement*)

performance reports from U. S. and France



235 MI IN 21 HRS — Moving across France, over main highways and through narrow city streets, a fleet of Tournatractors made a 235 mile trip in 2 days. Each unit towed a 12-yd LeTourneau Carryall. Average travel speed of 11 mph included stops for refueling, equipment checks, and meals. Top speed was about 19 mph.

FIRE-FIGHTER — In Missouri, Tournatractor helps combat stockpile fire by spreading burning coal. Continued use of this machine with its big rubber tires will effectively compact coal . . . greatly reduce possibility of further spontaneous combustion.

220 TONS HOURLY — A large Southern utility reclaims 220 tons (298 yds) of stockpiled coal per 50-min hr with their Tournatractor-Carryall team. Rig works 1000 ft "figure-8" cycle from edges of pile to centrally-located conveyor . . . makes 29 trips hourly. Operator says, "Tournatractor handles coal faster than anything I've seen in 9 years."

BLITZES PENN. RR STATION — To make way for a Philadelphia office building, McCloskey & Co. is razing the old Pennsylvania Railroad station. Their Tournatractor specializes in pushing heavy steel beams to a location where they can be loaded into trucks. Beams formerly served as track supports.

1 DOES WORK OF 6 — Tournatractor does all the heavy work on Edward Dufresne's Green & Gold Plantation near Luling, Louisiana. Main job is pulling cane carts. Discing with 3 plows at once, unit averages 150 acres per 24-hr day. That's 4 times as much as 91 hp crawler formerly used and 6 times as much as a 51 hp cane tractor, says Owner Dufresne.

To: LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

Please send illustrated book telling more about 186 hp tractor on rubber. We understand this request puts us under no obligation.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

TYPE OF WORK _____

_____

LETOURNEAU EQUIPMENT

Carryall—Trademark Reg. U.S. Pat. Off.
Tournatractor—Trademark Pic-449-C

Pays for itself...

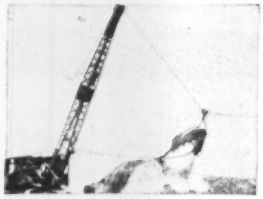
ON YOUR BOOM MACHINE

SAUERMAN SCRAPER

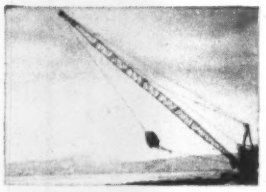
When you add a Sauerman Crescent Scraper to your boom machine as auxiliary equipment, you are making a profitable investment which will repay many times its moderate initial cost. This unique bottomless bucket will, in many cases, handle up to 50% greater load than the regular bucket or clamshell.

On short range work, such as backfilling, grading and similar jobs where material must be moved but does not require lifting, the Crescent is simply cast from the boom tip like the regular bucket. The Crescent bites into the earth wherever it strikes and fills to capacity on the forward pull. The load literally floats along the ground to the discharge point and is deposited when the scraper is raised by the boom line.

When a job calls for digging from a river, deep pit or soft area beyond the reach of the boom, the Crescent Scraper is suspended by chains from a simple trolley that rides on a track cable extending from the boom tip to an anchorage. One drum of the machine raises and lowers this track cable, while the other drum operates the inhaul cable attached to the front of the scraper. Digging, hauling and discharge proceed as in the casting operation. Following discharge the empty scraper is lifted and gravity-returned to the excavation point by merely tightening the track cable.

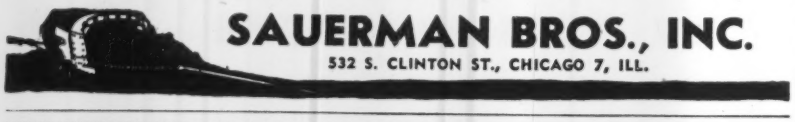


Above: A 1½-cu. yd. Sauerman Crescent used with a 1-cu. yd. dragline is lifted clear of the levee and returns to the borrow pit by gravity at 1500 fpm.



Above: Boom machine has a boom length of 110 feet and uses a 4-cu. yd. Crescent scraper, replacing a 2½-cu. yd. dragline bucket.

Find out how other operators use Crescent Scrapers on their boom machines for greater economy, efficiency and flexibility. Write today for illustrated literature.



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532 S. CLINTON ST., CHICAGO 7, ILL.

Would you use 1925 construction equipment today? No. Why not change over and equip your jobs with modern office trailers and cut costs.

CONTRACTORS' OFFICE TRAILER
Models 24'—28'—35' Price $2100. to $3500. Birch finish, drafting table, 2 built-in desks with letter files & drawers, other conveniences. Can offer three years finance plan. Write for pictures and plants.

TRAILER VILLAGE SALES, INC.
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Diamond Core Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

(Continued from page 141)

structural steel overhead approaches on Freeway between E. 26 St. and Washington Blvd., Los Angeles Co. Bids June 25. CD 6/3.

▲† **Peter Kiewit Sons' Co.**, 345 Kieways Ave., Arcadia, Calif. CA $2,145,245. aviation fuels storage facilities at Naval Supply Depot (Point Loma) and fuels receiving facilities, Naval Air Station, MIRAMAR, CALIF. Dpt. Navy, San Diego, Calif. Bids June 26. CD 6/17.

Peter Kiewit Sons' Co., & Fred J. Early Jr. Co., 22138 S. Vermont Ave., Torrance, Calif. LB. $877,300, est. $1,000,000. 30 m.g.p.d. sewage treatment plant, Newport Beach, SANTA ANA, CALIF. Orange Co., Sanitation Dist. 1, 2, 3, 5, 6, 7 and 11, 1104 W. 8 St., Santa Ana, Calif. Bids June 24. CD 6/5.

BUILDINGS

LOW BIDS AND CONTRACTS

Howard S. Wright & Co., Inc., 407 Yale Ave. N., Seattle, Wash. CA. $250,000. rein.-con. FACTORY branch and service bldg. on piling foundation, SEATTLE, WASH. Mid-Town Investment Co., c/o S. G. Morrison, archt., 1404 2 Ave., Seattle, Wash. Mack Motor Truck Corp., 701 9th Ave. N., lessee.

Teller Constr. Co., 845 N. Graham St., Portland, Ore. LB. $660,250, Benson HIGH SCHOOL addn., PORTLAND, ORE. School Dist. 1, 631 N.E. Clackamas St., Portland, Ore. Bids June 29. CD 6/8.

Buff Hensman, 10542 S. Gunn St., Whittier, Calif. CA. $795,400. 97 stucco DWELLINGS, Arisdell, Carmenita, Close, Guilford and Lanet Sts., WHITTIER, CALIF. Harry Brittain, Inc., 10542 S. Gunn St., Whittier, Calif.

CANADA

BIDS ASKED—BUILDINGS

▲ **Que., Longueuil**—ARMAMENT DEPOT—B.A. 7/28—Defence Constr. Ltd., 1247 Guy St., Montreal, R.C. N. Armament Depot, Job 24550, 1 story, 250x600 ft. rein.-steel, boiler house, $1,500,000. Plans deposit $100, M. P. McAndrew, c/o owner, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Baynes-Manning Ltd.**, 10527 101 St., Edmonton, Alta. LB $1,035,484. $1,062,453. $745,892. (3 types). 434 ft. Cushing Bridge with either continuous girder steel bridge, rein.-con. hollow girder steel bridge, rein.-con. T girder bridge, CALGARY, ALTA. City, Municipal Bldg., Calgary, Alta. Bids June 1. CD 5/14.

Modern Constr. Ltd., Moncton, N. B. CA $695,000. diverting the N. R. main line between Linwood Jct. and Auld's Cove (Porcupine) 14 mi., MONCTON, N. B. Canadian National Ry., G. R. Doull, regional ch. engr., Moncton, N. B. Bids May 22. CD 5/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Commonwealth Constr. Co., Ltd.**, 700 Taylor St., Vancouver, B. C. CA $6,000,000. MAIL ORDER CENTER and DEPARTMENT STORE, BURNABY, B. C. Robert Simpson Co., Ltd., 176 Yonge St., Toronto, Ont. Bids May 29. CD 5/8.

The Austin Co. Ltd., 2 King St. E., Toronto, Ont. CA Est. $600,000. 1 story, 63,800 sq. ft. atomizers and spray painting equip. PLANT, BARRIE, ONT. DeVilbiss Mfg. Co. Ltd., 673 Wellington Ave., Windsor, Ont. CD 6/17.

▲ **Byers Constr. Co. Ltd.**, 5675 Western Ave., Montreal, Que. CA Est. $3,000,000. WAREHOUSE and OFFICE between Kings Park Rd. and Decarie Blvd., St. Laurent, MONTREAL, QUE. Bell Telephone Co. of Canada, 1050 Beaver Hall Hill, Montreal, Que. Bids June 16. CD 6/2.

Montclair Constr. Ltd., 5515 Western Ave., Montreal, Que. CA Est. $400,000. 5 story, bsmt., 52x125 ft., rein.-con., brick OFFICE, MONTREAL, QUE. Pascal Realties Co. Ltd., 307 W. Craig St., Montreal, Que. S. Gerson, 1178 Phillips Pl., Montreal, Que., archt.

▲† **D. Boileau Ltd.**, 705 Beaumont Ave., Montreal, Que. CA Est. $1,500,000. 5 story, 80x238 ft., concrete, stone COLLEGE addn., ST. LAURENT, QUE. Reverend Sisters of the Cross, St. Laurent, Que. C. G. Braueet, 89 Notre Dame St. E., Montreal, Que., archt. Surveyer & Assoc., 1440 St. Catherine St. W., Montreal, Que., engrs.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ALASKA**—Alaska Roads Comn., Dpt. Interior, 4 and Harris Sts., Juneau,

McLaughlin, Inc., Ford Bldg., Great Falls, Mont. CA $1,446,424, grading, surf., bit. surf. 60 mi. Glenn Hy., Sect. D2 E. Bids June 16. CD 6/24, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, Soc. de Constr. des Batignolles (France) and Garanti Constr. Co., (Turkey), CA $14,334,451, dam

and hydro-electric plant in Seyhan River, 5 mi. north of Adana, TURKEY. Govt. of Turkey, Ankara, Turkey, Knappen-Tippetts-Abbett-McCarthy, 62 W. 47 St., New York, N. Y., U. S. A., engrs. CD 2/28/52, under CA.

Proposed Projects

WATER SUPPLY

▲ **Mich., Pleasant Ridge**—South Oakland County Water Auth., 23646 Woodward St., water sys., incl. reservoir in connection with proposed water main in Greenfield Rd. $5,000,000. George G. Schmid, ch. engr. CD 4/2.

Mo., St. Charles—City, c/o City Council, expansion, imprvs. to WW sys., incl. addnl. ground storage reservoir booster pumping station, steel tank on tower, exten. distr. sys. $300,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

Tenn., McMinnville—City, voted bonds June 19, WW imprvs. $778,500. J. Sanders Parker, 816 8th Ave. S., Nashville, consult. engr. CD 6/15.

Tex., Bryan—City, (c) 4 water supply wells, $145,000, (d) water pumping unit, $145,000, (e) 7½ mi. water mains from wells to reservoir, $255,000, (i) water main extens. into recently annexed areas, $250,000, (k) addnl. WW sys. rehabilitation, $75,000. Lutz & May, 818 Finance Bldg., Kansas City, Mo., consult. engrs. CD 3/4.

SEWERS, WASTE DISPOSAL

Ind., Beech Grove—Bd. P. Wks., City Hall, sewage treatment plant and sewerage system, $500,000. L. I. Couch & Co., 230 E. Ohio St., Indianapolis, Zone 4, consult. engrs. CD 1/30/52.

▲ **O., Shaker Heights**—City, City Hall, bond election Nov. 3, sewer constr. $1,000,000. CD 2/8/50.

Tenn., McMinnville—City, voted bonds June 19, sanitary sewer imprvs. $992,000. J. Sanders Parker, 816 8th Ave. S., Nashville, consult. engr. CD 6/15. 7/16/53.

Tex., Bryan—City, (g) new sanitary sewer collection lines, $500,000, (h) sanitary sewer disposal unit, $150,000, (j) storm sewers, $100,000. Lutz & May, 818 Finance Bldg., Kansas City, Mo., consult. engrs. CD 2/9.

BRIDGES

SOUTH CAROLINA—Hilton Head Toll Bridge Auth., J. Sturgeon, ch., Bluffton, will open bids July 30 for engineering services in connection with proposed bridges across Mackey Creek at the Intracoastal Waterway between Hilton Head Island and the Mainland near Bluffton, S. C.; adv. ENR 7/9.

STREETS AND ROADS

Ga., Albany—City, City Hall, 1953 summer street paving, $153,000.

Ind., Indianapolis—Bd. P. Wks., City Hall, paving, wid'n. Sherman Dr., 10 to 16 Sts., c.conc. paving and wid'n. from 18 to 48 ft. $260,000. W. R. Hunt, City Hall, city engr. CD 7/22/43.

EARTHWORK, WATERWAYS

La., Monroe—Ouachita Parish Drainage Dist. 1, J. A. Norris, pres., West Monroe, installing two 55,000 gpm drainage pumps, $200,000.

Tex., Edinburg—Hidalgo Co., Edinburg, bond election July 25, flood control work. $250,000. CD 9/12/51.

AIRPORTS

▲ **Fla., Miami**—AIRPORT—Dade Co. Port Auth., Court House, (1) hangar for Pan American Airways $600,000; (2) addn. cargo handling facilities $250,000 (3) vehicle garage, $200,000; addnl. sanitary sewers and disposal plant, $150,000, at Miami International Airport. CD 4/26/50.

LATIN AMERICA

▲ **Honduras**—Republic of Honduras, Tegucigalpa, may ask American or European engineers to make a complete survey of proposed hydro-electric proj. in Yojoa-Rio Lindo Distr. $6,000,000. CD 4/1/48.

PUBLIC BUILDINGS

Conn., Middlefield—SCHOOL—Town, Bd. Educ., plans by Carl E. Segerberg, 363 Main St., Middletown, grade school and high school consolidated school. $900,000.

Conn., Ridgefield—SCHOOL—Town, Bd. Educ., Town Hall, plans by Sherwood Mills & Smith, 65 Broad St., Stamford, elementary school, Lounsbury Property, $500,000, Frederic E. Sutton, 220 Broadway, New York, N. Y., mech. engr., Seeleye-Stevenson & Value, 101 Park Ave., New York, N. Y., struct. engrs. CD 2/25.

Conn., Westport—SCHOOL—Town, G. E. Rost, supt. Schools, A. Y. Parsell, chn. Bd. Educ., plans by Gilroy & Gaydash, 64 Wall St., Norwalk, Junior High School Hyde Lane, $890,000. CD 11/17/47.

▲ **D. C., Wash.**—HOUSING—National Capital Housing Auth., 1728 L St. N. W., plans by William F. R. Ballard, 123 E. 77 St., New York, N. Y. (second sect.) East Capitol Dwellings, 58 and Blaine Sts. N. E., $4,787,920.

▲ **Ill., Centreville Twp. (East St. Louis P.O.)**—HOSPITAL—Centreville Township Hospital, c/o Francis Touchette, super., Church Lane, Centreville Twp., East St. Louis, surveys, 125-bed capacity hospital, $2,500,000. Forest R. Ostrander, Hinsdale, hospital consultant.

▲ **Ia., Cedar Rapids**—SCHOOLS—Bd. Educ., 346 2nd Ave. S.W., plans by W. J. Brown, 213 Higley Bldg., Cedar Rapids, and Perkins & Will, assoc. archt., 309 W. Jackson St., Chicago, Ill., 5 new schools and imprv., 5 schools, $2,750,000. CD 3/17.

Kan., Olathe—COURT HOUSE—Johnson Co., plans by Neville, Sharp & Simon, 12 and Walnut Sts., Kansas City, Mo., court house addn. $500,000.

▲ **La., New Orleans**—SCHOOLS—Orleans Parish School Bd., 703 Carondelet St., plans by Freret & Wolf, 630 Gravier St., Gaudet Junior High School, $1,400,000; plans by Curtis & Davis, 822 Perdido St., Gaudet Negro Senior High School, $2,000,000; plans by Chas. R. Colbert, Carondelet Bldg., Lafitte Elementary School, $620,000; plans by Jules K. DeLaVergne, Marquette Bldg., Nelson Area Elementary School, $620,000; plans by Claude E. Hooton, 509 St. Ann St., Desire Street Elementary School, $620,000.

Md., Towson—SCHOOLS—Baltimore Co. Bd. Educ., Aigburth Rd., plans by Gaudreau & Gaudreau, 330 N. Charles St., Baltimore, Oakleigh Elementary School, White Oak Ave. and Oakleigh Rd., near Baltimore, $650,000; Iverness Elementary School, Iverness Sect., $500,000, Edw. G. Stapleton, supt.

Mass., Peabody—SCHOOL—City, City Hall, plans by John M. Gray, 175 High St., Boston, Kiley Elementary School, West Peabody, $800,000.

Mass., Watertown—SCHOOL—Town, Francis A. Kelly, chn. School Bldg. Comm., plans by Coletti Bros., 687 Boylston St., Boston, East Junior High School addn., $750,000. (Correction-archts.). CD 6/24.

▲ **Mich., Port Huron**—CIVIC AUDITORIUM—City Comm., civic auditorium, incl. sport arena and ice rink. $1,000,000.

▲ **Minn., Hopkins**—SCHOOL—Bd. Educ., L. H. Tanglen, supt. Schools, Independent School Dist. No. 225, voted $3,500,000 bonds June 23, high school. Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 6/10.

Mo., Washington—SCHOOL—B. Educ. voted $500,000 bonds, brick, concrete high school.

▲ **N. Y., Glenwood Landing**—HIGH SCHOOL—Bd. Educ., Villages of Glenwood Landing, Sea Cliff and Glen Head, high school on 30-acre site, Glen Cove Rd. $4,000,000.

▲ **N. C., Gastonia**—SCHOOL—Gaston Co. Bd. Educ., Gastonia, voted bonds June 20, schools imprvs. $5,600,000. CD 5/11.

O., Akron—ARTS and SCIENCE—Bd. Trustees, University of Akron, 302 E. Buchtel St., plans by William B. Huff, 1050 N. Main St., arts and science bldg. $800,000.

O., Bedford—SCHOOLS—Bd. Educ., Bedford, bond election Nov. 3, new elementary school, addnl. work at high school now under constr. $800,000. CD 5/5/52.

Tenn., Copperhill—HOSPITAL—Copper Basin General Hospital, Copperhill, plans by John J. Harte Co., 284 Techwood Dr., N. W. Atlanta, Ga., hospital. $500,000. CD 5/28.

MAKE YOUR OLD PIPE LINE LIKE NEW...
WITHOUT APPRECIABLY DISTURBING SERVICE!

Typical pipe line *before* Pipe Linings treatment

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INCREASE CAPACITY...CUT COSTS

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No need for major interruption to present service... no need to buy expensive, hard-to-get new pipe.

Patented equipment used by Pipe Linings, Inc. removes all tuberculation and incrustation from the interior of old pipe lines...applies a new continuous, smooth-surface cement mortar lining...*with only momentary interruption to install by-pass lines.*

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- Protects against discoloration and contamination
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Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Tenn., Lebanon—SCHOOL—Wilson Co. Bd. Educ., Lebanon, voted bonds June 27, school imprvs. $903,000. CD 5/19.

Tenn., Manchester—HIGH SCHOOL—Coffee Co. Bd. Educ., Manchester, voted bonds, high school. $925,000. CD 5/19.

▲ Tenn., Nashville—STATE CAPITOL—State of Tennessee, Nashville, plans by Joseph W. Hart, 2418 West End Ave., remodel state capitol. $1,300,000.

▲ Tex., Bryan—POWER PLANT—City, Bryan, electric power plant unit, $1,000,000. Lutz & May, 818 Finance Bldg., Kansas City, Mo., consult. engrs. CD 3/3.

▲ Va., Norfolk—SCHOOL—Norfolk School Bd., Bank and Charlotte Sts., plans by Oliver & Smith, 409 Yarmouth St., Thole Street School. $1,000,000. Fraioli-Blum-Yesselman, 1214 Granby St., consult. engrs.

▲ Va., Williamsburg—SCHOOL—James City County School Bd., Williamsburg, voted $600,000 bonds June 23 new high and elementary school, two school addns. $1,020,000. Williams, Colle & Blanchard, 3415 Virginia Ave., Newport News, archts. R. Kemper Taylor, Jr., School Bd. Chn., c/o owner, engr. CD 5/22.

▲ Wyo., Casper—HOSPITAL—Natrona Co., Court House, $1,000,000 bond election July 14, hospital, (Correction—bond election date.) CD 6/9.

COMMERCIAL BUILDINGS

▲ Colo., Golden—HOUSING, etc.—Mountain View Constr. Co., 6622 E. Colfax Ave., Denver, 410 brick residences in housing project and 10 stores in shopping center, between W. 1 and W. 6 Ave. and Carr and Garison Sts. $6,000,000.

Fla., Miami—DEPARTMENT STORE—Sears, Roebuck & Co., 675 Ponce de Leon Ave., department store. $750,000.

Kan., Kansas City—SHOPPING CENTER—Winn-Rau 7701 State Line, Kansas City, Mo., shopping center, 51 St. and Gibbs Rd. $600,000.

▲ La., Shreveport—SHOPPING CENTER—Big Chain Co., c/o Samuel G. Wiener, archt., American Bank Bldg., shopping center, $1,000,000.

Md., Annapolis—DORMITORY—St. Johns College, Annapolis, plans by Jas. R. Edmunds Jr., 1025 St. Paul St., Baltimore, 3 story, brick, block concrete, steel women's dormitory. $800,000.

Mich., Bridgman—CHURCH AND EDUCATIONAL—Immanuel Lutheran Church, Harold Ott, pastor, Bridgman, masonry church and educational structures, $525,000.

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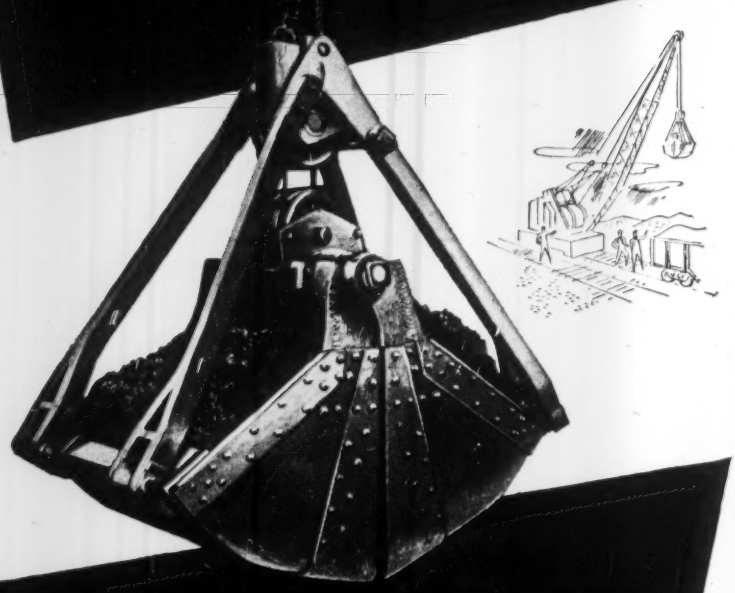

ROPE REEVE, POWER WHEEL AND LINK TYPE

WRITE FOR ILLUSTRATED CATALOGUE

INDUSTRIAL BROWNHOIST CORPORATION

BAY CITY, MICHIGAN

145

▲ Mo., Kansas City—SHOPPING CENTER—Milgram Food Store, Inc., c/o Leonard Milgram, vice pres., 25 and Gillham Sts., Kansas City, Mo., plans by Voskamp & Slezak, 112 E. 10 St., Kansas City, Mo., shopping center, 63 and Prospect Sts. $1,000,000.

▲ N. Y., Forest Hills—APARTMENT—Sam Letrak, 97-27, 64 Rd., plans by George Miller, 19 W. 44 St., New York Zone 36, 6 story apartment, Dartmouth St., and Yellowstone Blvd. $1,600,000.

▲ N. Y., Forest Hills—HIGH SCHOOL—Our Lady Queen of Martyrs Church, Queens Blvd., plans by Maginnis & Walsh, 126 Newbury St., Boston, Mass., high school, Queens Blvd. $1,000,000.

▲ N. Y., New York—APARTMENTS—Elghanayan, 574 West End Ave., plans by Rosario Candela & Paul Resnick, 654 Madison Ave., Zone 21, 10 story apartment, 213 225 E. 69 St. $1,250,000.

N. Y., New York—APARTMENT—Jack Match, 146 Central Park West, plans by Seelig & Finkelstein, 153 Pierrepont St., Brooklyn, Zone 2, 6 story apartment, Kings College Pl. and 211 St. $960,000.

▲ Pa., Cheltenham—SHOPPING CENTER—Gimbel Brothers, 9th and Market Sts., Phila., shopping center, Ogontz and Cheltenham Aves., Washington Lane. $15,000,000.

▲ Pa., Forest Park—HOUSING—International Ladies Garment Workers Union, 1710 Broadway, New York 19, N. Y., expansion of housing and recreational facilities at Unity Houses. $1,000,000.

▲ R. I., East Providence—SHOPPING CENTER—Syndicate c/o Fred Podren, 143 Newbury St., Boston, Mass., shopping center, incl. 50 stores, roads, grading, etc. Junction Pawtucket and Taunton Aves. $4,000,000.

▲ Tenn., Nashville—BANK—Federal Reserve Bank, Nashville Branch, 226 Third Ave. N., plans by Toombs & Co., 127 Walton St. N. W., Atlanta, Ga., bank $1,000,000. CD 10/13.

▲ Tex., Houston—OFFICE—Shelby Constr. Co., Inc., c/o Lewis Leader, 4320 Paris Ave., New Orleans, La., 17 story office. $3,750,000.

▲ Va., Richmond—ADMINISTRATIVE—Chesapeake & Potomac Telephone Co., 703 E. Grace St., administrative bldg. $1,000,000.

INDUSTRIAL BUILDINGS

▲ Ind., Indianapolis—SERVICE CENTER—Indianapolis Power & Light Co., 17 N. Meridian St., Zone 6, service center, incl. office, storage, maintenance bldgs., storerooms, etc., Arlington and 38 Sts. $2,000,000.

▲ Ky., Erlanger—WAREHOUSE—Palm Beach Co., 240 W. 7 St., Cincinnati, O., 200,000 sq. ft. storage clothing warehouse, U.S. 25 on city limits, $1,500,000.

▲ Mich., Flint—PLANT—Chevrolet Div., General Motors Corp., General Motors Bldg., Detroit, 900x900 ft. stamping plant, Bristol Rd. $1,000,000.

Minn., St. Louis Park—WAREHOUSE-OFFICE—Reinhold Brothers Co., E. L. Davis, chn. Bd., 11 So. 9 St., plans by D. J. Griswold, 80 S. 7 St., Minneapolis, warehouse-office, $700,000. CD 6/24.

N. Y., Flushing—STORAGE, etc.—Anheuser Busch, Inc., 721 Pestalozzi St., St. Louis, Mo., plans by Fordyce & Hamby, 29 W. 57 St., New York, Zone 19, 2 story storage and office, 4401-4423 Avenue H. $500,000.

N. C., Weaverville—PLANT—Cashmere Corp. of America, 2765 E. 55 St., Cleveland, O., plans by Lockwood-Greene Engineers, Spartanburg, S. C., sweater mfg. plant. $500,000. CD 6/29.

▲ O., Cleveland—STAMPING PLANT—Ford Motor Co., 300 Schaefer St., Dearborn, Mich., stamping plant, Walton Hills Sect., Northfield and Alexander Rds. $100,000,000.

▲ O., Cleveland—DISTRIBUTION CENTER—Western Electric Co., 195 Broadway, New York, N. Y., 1 story building to serve as distribution center for supplies at Solon for Ohio, Michigan and Indiana Bell Telephone operations at Aurora and Solon Rds. $1,000,000.

▲ O., Toledo—POWER PLANT—Republic Steel Corp., 1405 Republic Bldg., Cleveland, Zone 1, iron power plant. $2,000,000.

▲ Tex., Dallas—STORE—A. Harris & Co., Main and Akard Sts., store, 18-acre tract, south of Kest Blvd. between Beckley and U. S. Hy. 77, in Oak Cliff. $2,500,000.

UNCLASSIFIED

Ill., Chicago—FIELD HOUSE—Chicago Park Dist., 425 E. 14 St., Zone 5, 1 story bsmnt, field house in Washington Park. $500,000, Ralph H. Burke, 20 N. Wacker Dr., Zone 6, consult. engr. CD 6/11/45.

▲ Pa., Pen Argyl—ROOFS—Esso Standard Oil Co., 15 W. 51 St., New York, N. Y., roofs to protect oil storage in quarries, near here. $1,000,000.

▲ Texas, Louisiana, Mississippi, Alabama, Tennessee, Kentucky, Ohio, Pennsylvania, New York—GAS LINES—Houston Texas Gas & Oil Co., c/o Glenn McCarthy, Shamrock Hotel, Houston, Tex., constr. two 30 in. gas transmission lines, one line starts in Lower Rio Grande, Tex. and other line starts in coastal tidelands of Louisiana and lines will parallel from point in northern Mississippi to Ohio where one line continues north and the other through Pennsylvania and New York. $300,000,000.

Wisconsin—RURAL DISTRIBUTION LINES—Oakdale Cooperative Electric Assoc., Oakdale, 57 mi. rural distr. lines and sys. imprvs., Monroe Co. $442,000.

WAHLEACH, BRITISH COLUMBIA

Another Penstock job made easier with

DRESSER COUPLINGS

Lighter, high-yield steel pipe cuts tonnage, shipping, installation costs . . . speeds completion of 1760-foot Wahleach penstock.

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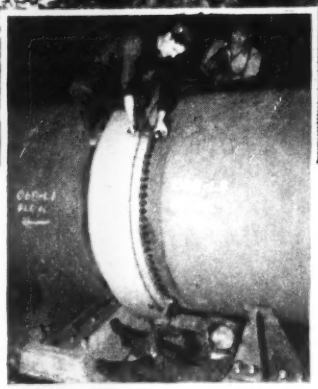
Dresser Couplings permitted faster completion of the line and assured permanently tight, maintenance-free joints. This resulted in *earlier revenue* from plant operation . . . *uninterrupted service* to power consumers.



Above—Overbends made by 1° deflections at each field joint eliminated shop-made bends and special anchors.

Left—Four men averaged less than four hours making bottle-tight joint . . . 975 psi working pressure, 1500 psi shop test on couplings.

Project designed by B.C. International Engineering Co., Ltd.
Penstock installation by Arrow Transfer Co., Vancouver

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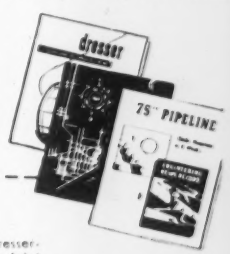

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Problem: Wind-swept roads, rutted and choked with shifting blow sand in dry weather, impassable mud bogs in wet weather.

Solution: A revolutionary new method of stabilizing secondary roads with Cleveland Trenchers.

Result: An almost perfect, all-weather road surface, raised higher than surrounding land; will not fill up with blow sand, dries quickly after heavy rain.

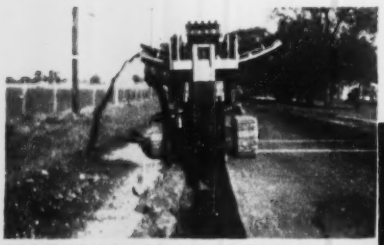
CLEVELAND TRENCHER

...Keynote of new low-cost method of building roads

CLEVELAND TRENCHERS now are building and stabilizing low-cost roads in dry, sandy areas where roadbeds are underlain with clay subsoil. Clevelands are the key machines in a revolutionary new method developed by an alert, clear-thinking county road commissioner.

The method was originated by Road Commissioner J. F. Bodine of Mitchell County, Texas, where most roads are composed of wind-blown dune sand overlying a substratum of heavy clay. Road graders are used to blade roadside sand into the center of the road. A Cleveland then digs 2 parallel trenches, about 5′ deep, 26″ wide, on lines 12′ from road center. The Cleveland excavates and thoroughly mixes clay and sand in about equal amounts, depositing the mixture on the sand in the roadbed. Graders then fill the trenches with excess sand, blade and compact the roadway, and cut side ditches for drainage. The result is an almost perfect surface which does not blow when dry, and drains quickly after rain. Because it is higher than the land on either side it will not fill up with blow sand.

Another demonstration of the all-around, wide useability of versatile Cleveland Trenchers!



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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 21 Massachusetts
STREETS AND ROADS
July 21 Massachusetts

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Bonvicini Building Co., Inc., 1500 S. Main St., Torrington, Conn. LB $1,506,000, est. $1,500,000. Elementary SCHOOL, Whiting Lane, WEST HARTFORD, CONN. Town Bd. Educ., Town Hall, West Hartford, Conn. Moore & Salsbury, 10 N. Main St. W., Hartford, Conn., archt. Bids July 2. CD 6/5.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 21 Maryland July 31 Pennsylvania

BIDS ASKED—BUILDINGS

▲ Md., Baltimore—SCHOOL—B.A. 7/22—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, 2 and 3 story, North Baltimore Junior High School, $1,400,000. Plans deposit $50. Adams and Riggs, 2513 N. Charles St., archts. CD 7/24/52.

▲† D. C., Wash.—PHARMACY—B.A. 8/7—General Services Admin., Pub. Bldgs. Service, F St. between 18 and 19 Sts. N.W., pharmacy bldg. Howard University. $7,200,000. Plans deposit $15, Robinson & Williams, 1927 11 St. N.W., Wash., D. C., archts. CD 1/19.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† N. R. Corbisello, Inc., & Triple Cities Constr. Co., P.O. Box 901, Binghamton, N. Y. CA. $2,991,411, runway extens. at airport, SCHENECTADY, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids June 23. CD 5/14.

▲ PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore, Md., LB $139,090 for the entire sect., LB $2,969,685, for sect. less that portion which connects with the planned Delaware River Bridge from the interchange at U. S. Rte. 13, 3.15 mi. grading, drainage, paving on Delaware River Pennsylvania Turnpike Exten., Bucks Co. Bids July 7. CD 6/17.

▲ J. D. Hedin Constr. Co., 2900 Newton St. N.W., Wash., D. C. CA. $1,846,000. Incinerator Bldg. No. 3, West Virginia Ave. and Mt. Olivet Rd. N.E., WASH., D. C. Dist. Columbia, 499 Pennsylvania Ave. N.W., Wash., D. C. Bids June 30, awarded July 6. CD 7/2, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Stanford Terrace Homes, c/o Teas & Steinbrenner, archts., Homeland Bldg., Malverne, N. Y. Owner Builds. $3,000,000. 195 HOUSES, 55-acre tract on Hempstead Turnpike between Wantagh Ave. and Massapequa-Hicksville Rd., PLAINEDGE-BETHPAGE, N. Y.

▲ Rolling Ridge Homes, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $2,000,000. 140 HOUSES on tract at Central Park and Old Country Rds., PLAINVIEW, N. Y.

▲ Sol G. Atlas, 10 Grace Ave., Great Neck, N. Y. Owner Builds. Total cost $20,000,000-$30,000,000. Cross County SHOPPING CENTER, 11 bldgs. on 70 acre site at Central Park Ave. and Cross County Parkway, YONKERS, N. Y. Lathrop Douglass, 518 Fifth Ave., New York 18, N. Y. archt. for entire project. Kahn & Jacobs, 2 Park Ave., New York 16, N. Y. consult. archts. for Gimbel store. CD 7/6/50, under CA.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 24 Kentucky
STREETS AND ROADS
July 24 Kentucky

BUILDINGS

LOW BIDS AND CONTRACTS

▲ B. F. Parrott & Co., Inc., Boxley Bldg., Roanoke, Va. CA $2,449,800, Memorial and Crippled Childrens' HOSPITAL addn., ROANOKE, VA. Memorial & Crippled Children's Hospital, Crystal Springs, Roanoke, Va. Bids June 16. CD 6/22, under LB.

▲ Larsen Bros. and John Rasmussen, 328 6th Ave., Bradenton, Fla., LB $1,679,000. HOSPITAL, SARASOTA, FLA. Sarasota Co., Sarasota, Fla. Bids June 29. CD 5/26.

▲ State, State Property & Bldgs. Comn., Frankfort, Ky., rejected bids June 18, renovation of interior of State Capitol, FRANKFORT, KY. LB $1,564,700. CD 6/24, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 21 Wisconsin July 28 Ohio
STREETS AND ROADS
July 21 Wisconsin July 28 Ohio

▲ Ill., Chicago—B.A. 7/29—City, City Hall, refuse incinerator plant, 1631 Medill St. $2,000,000. Paul F. Gerhardt, City Hall, city archt. CD 2/8/51.

▲ O., Cleveland—MAINTENANCE BLDG., etc.—B.A. 8/14—Cleveland Transit System, 1404 E. 9 St., Zone 5, maintenance bldg., passenger station and bus roadways at Windermere Terminal of Cleveland Rapid Transit System. $2,200,000. Plans deposit $40. Morris W. Rew, c/o owner, engr. CD 2/9/50.

BIDS ASKED—BUILDINGS

▲ Wis., Green Bay—POWER PLANT—B.A. 7/22—Wisconsin Public Service Corp., Green Bay, superstructure for Western Steam Power Plant, near Rothschild; Marathon Co. Total cost $13,000,000. Pioneer Service & Engr. Co., 231 S. LaSalle St., Chicago, Ill., engr. CD 9/19/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Gargaro Co., Inc., 40 E. Seven Mile Rd., Detroit, Mich. CA $3,425,900, est. $4,500,000. Middle Rouge Interceptor sewer to serve Northwale Canton, Dearborn, Redford, Plymouth, Nankin, Livonia, etc., DETROIT, MICH. Wayne Co., Christopher J. Mulle, drain comr., 3800 Cadillac Tower, Detroit, Mich. Bids June 29. CD 6/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Advance Home Builders, Inc., 14460 Dexter St., Detroit, Mich. Owner Builds. $2,400,000. Winston Park Subdivision, 200 brick HOMES, REDFORD, MICH.

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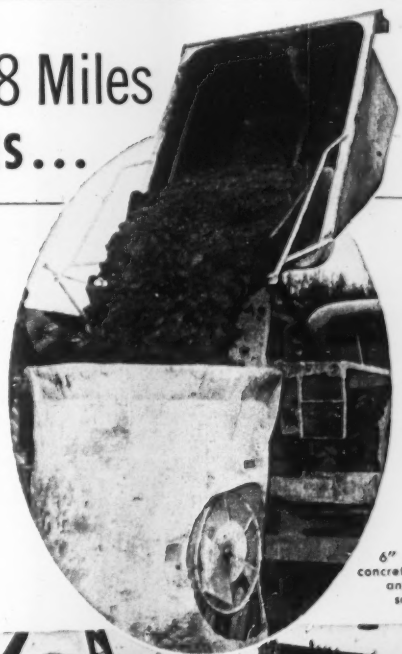

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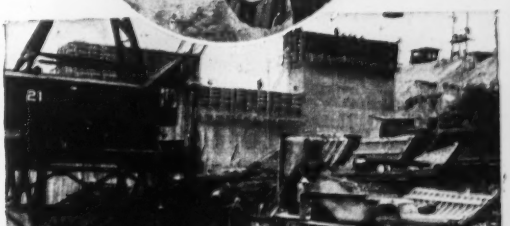

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WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 24 Minnesota
STREETS AND ROADS
July 23 Kansas July 24 Minnesota

▲ Mo., St. Louis—B.A. 8/11—Bd. P. Service, Frank J. McDevitt, pres., 304 City Hall, Zone 3, 2 pumping stations to alleviate sewage problem in River Des Peres drainage sys. at Catlin and Virginia Aves., other east of Macklind St. $1,415,000. CD 11/13.

▲ Oklahoma, Arkansas and Louisiana—PIPE LINE—Bids Asked—Sunray Oil Corp., 1st Natl. Bldg., Tulsa, Okla., 440 mi. 10 in. products pipe line from Sunray (Duncan, Okla.) to a water transportational terminal, east, on Mississippi River. $19,500,000. CD 6/2.

BIDS ASKED—BUILDINGS

▲ Kan., Wichita—RETAIL STORE—B.A. 7/22—Sears, Roebuck & Co., 8 E. Congress St., Chicago, Ill., 3 story, 127x117 ft. branch retail store. $3,000,000. Overend & Boucher, Brown Bldg., Wichita, archts. CD 10/8.

▲ Tex., Fort Worth—SHOPPING CENTER—B.A. 7/23—Fair West Building Corp., 808 Throckmorton St., 2 story, 100,000 sq. ft. brick, tile, concrete, steel shopping center, Ridglea W. addn. $2,000,000. Plans deposit $25. Charles E. Armstrong, 300 First Life Bldg., archt. CD 7/14/52.

▲ Okla., Duncan—COKING UNIT—Bids Asked—Sunray Oil Corp., 1st Natl. Bldg., Tulsa, coking unit, 9,000 bbl. per day capacity. $4,000,000. CD 6/10.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ O. R. Burden Constr. Corp., 6702 E. 21 St., Tulsa, Okla., CA. $5,000,000. 160 mi. oil pipe line from Tioga to Standard Oil refinery at Mandan, NORTH DAKOTA. Service Pipe Line Co., J. H. Keyes, Jr., superv. engr., 119 E. 6 St., Tulsa, Okla. CD 1/22.

▲† Nolan Bros., Inc., 1210 Builders Exchange, Minneapolis, Minn., LB $1,985,557, est. $2,009,883, apron strengthening, Carswell Air Force Base, ENG-41-443-53-53, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids July 7. CD 6/25.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ McCarthy Constr. Co., 300 Roosevelt Bldg., St. Louis, Mo. CA $3,000,000. general contract 7 story HOSPITAL addn., ROCHESTER, MINN. St. Mary's Hospital, Rochester, Minn. Maguolo & Quick, 4908 Delmar Blvd., St. Louis, Mo., archts. R. V. McCann, 606 Syndicate Bldg., Minneapolis, Minn., assoc. archt.

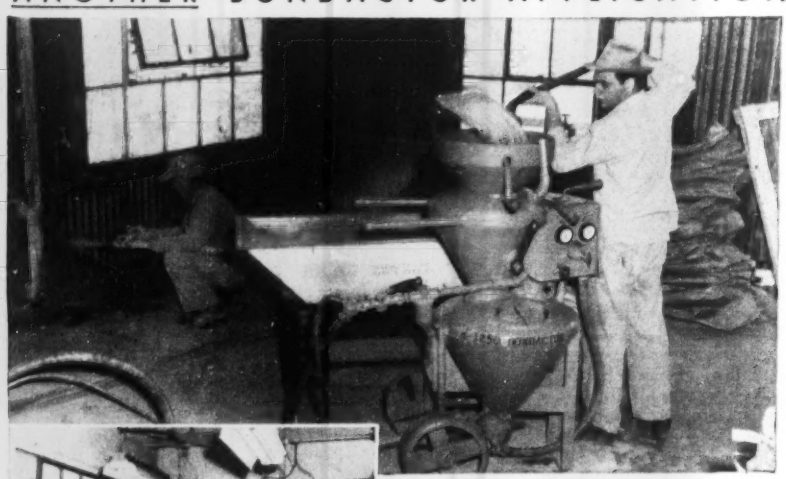
▲ Bd. Educ., Library Bldg., Kansas City, Mo. cancelled bids to have been opened July 2. Secondary SCHOOL, KANSAS CITY, MO. Est. $2,500,000. Will re-advertise. CD 6/4.

▲ Haskell Culwell Co., 42 N.E. 28 St., Oklahoma City 5, Okla., CA. $3,000,000, 18 Story OFFICE, BARTLESVILLE, OKLA. H. C. Price Co., Bartlesville, Okla. Frank Lloyd Wright, Spring Green, Wis., archt. Awarded July 1. CD 6/3.

▲ Hydrocarbon Constr. Co., M & M Bldg., Houston, Tex. CA $2,750,000. carbon black PLANT, PONCA CITY, OKLA. Continental Blacks, Inc., 1400 W. 10 St., Amarillo, Tex. Fish Eng. Corp., M & M Bldg., Houston, Tex., engrs. CD 6/10.

▲ Manhattan Constr. Co. of Texas, 2828 Pease St., Houston, Tex., CA $2,345,000, est. $2,000,000. 18-story OFFICE as an annex for Houston Club Bldg., Travis St. between Rusk and Capitol. Russ Baty, Lamar Annex, Houston, Tex., archt. and Robert J. Cummins, Bankers Mortgage Bldg., Houston, Tex., engr.; CA $1,685,000, 12 story CLUB HEADQUARTERS BLDG., (consists of adding 12 storys to existing 6 story Natl. Bank Commerce Bldg.), HOUSTON, TEX. Main & Rusk Realty Co. (Jesse H. Jones, Interests), Sterling

ANOTHER BONDACTOR APPLICATION



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FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 29 California
STREETS AND ROADS
July 29 California

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲† Morrison-Knudsen Co., Inc., 411 W. 5 St., Los Angeles, Calif. CA $1,990,792, est. $2,028,935. approx. 27 mi. concrete lined canals and laterals, distr. works to bring water to approx. 7,500 acres land Wellton-Mohawk Division of Gila Proj., Spec. DC 1954, ARIZONA. Bureau Reclamation, Dpt. Interior, Yuma, Ariz. CD 6/24 under LB.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,
Cberg Bros. Constr. Co., 401 W. Florence Ave., Inglewood, Calif. CA $1,655,337. 1.1 mi. grade, pave, 3 bridges between Flower St. and Olympic Blvd., Los Angeles Co. Bids June 11, awarded June 26. CD 6/16, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ Que., Montreal—OFFICE—B.A. 7/20—Guy Towers Inc., Guy St., 15 Story, 2 bsmt., brick office, Guy St. $3,500,000. Greenspoon, Freelander & Dunn, 4151 Sherbrooke St. W., archts. A. Benjamin, 4157 Sherbrooke St. W., engr.

▲ Ont., Toronto—OFFICE—B.A. 8/5—Dpt. P. Wks., Parliament Bldgs., 7 story, bsmt., 107x219 ft., brick office, Queen St. W. and University Ave., $2,500,000. Plans deposit $50. Marani & Morris, 1250 Bay St., archts. H. H. Angus & Assoc., Ltd., 1221 Bay St., engrs. G. N. Williams, deputy minister and ch. archt.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ Pyke & White Constr. Co. Ltd., 6528 Victoria Dr., Vancouver, B. C. CA $1,606,836. 224 HOUSING units in Little Mountain area, VANCOUVER, B. C. Canada Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. CD 6/3; under LB.

ALASKA

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲† Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho., LB $1,258,683, est. $1,507,791. Phase A, outside utilities proj., Inv. 53-84, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids July 2.

▲† Lytle-Green-Birch, Securities Bldg., Seattle 1, Wash., CA. $2,287,547. est. $2,439,503, 16 two story frame 8-family quarters bldgs., Inv. 53-78, Ladd Air Force Base, ALASKA. U. S. Eng., Arcade Bldg., Seattle 1, Wash. Bids June 2. CD 6/8, under LB.

▲† Anderson Constr. Co.—Montin-Benson Corp., Central Bldg., Seattle 4, Wash., CA. $1,367,900. heating plant addn. and repairs, Inv. 53-102, Ladd Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids June 29. CD 7/6, under LB.

BUILDINGS
LOW BIDS AND CONTRACTS

▲† J. H. Pomeroy & Co., Inc., Republic Bldg., Seattle 1, Wash., CA $2,629,836, est. $2,396,295, Family HOUSING, other bldgs., utilities, Inv. 53-71, KENAI, ALASKA. U. S. Eng., Anchorage, Alaska. Bids June 24. CD 7/2, under LB.

(Proposal Advertisements see pp. 154 to 156)

Air conditioning split: Custom vs. packaged units

The General Electric Co. has dropped custom-built air-conditioning equipment from its line and will concentrate on packaged units. This action by a major manufacturer points up two divergent trends that undoubtedly will influence design of many types of buildings.

Central air conditioning—which means relatively large equipment, engineered and site-assembled for specific applications, feeding air to various locations through a system of ducts—has been generally used for large structures. But GE is convinced that multiple-unit installations offer enough advantages, including lower initial cost and economical operation, to justify its giving up central air-conditioning completely. Factory-assembled, these packaged units are available in ratings from 2 hp up, as compared with the lower-rated window conditioners.

So building designers will find it important to decide, early in the planning stage, whether to specify central air-conditioning or packaged units. Ductwork and equipment space requirements of the two types differ considerably. These will influence such major design factors as story height, usable floor area, appearance of interiors, and flexibility of space use.

Other air-conditioning manufacturers do not agree completely with GE. Carrier Corp., for example, which makes both factory-assembled and custom-built units, argues that central air-conditioning is better than multiple units for certain installations. However, Carrier cannot clearly define the general applications for which one system or the other is better suited. That's why designers should consider the merits of both types for every building they plan to air condition.

• **GE says**—A look into the sales record of packaged coolers (2 to 15 hp) shows the trend (see chart). In 1937—the first year records were kept on this type of conditioner—the whole industry shipped only 1,000 units. By 1941, about 6,000 were being produced. In 1945, annual sales were 13,800, and there was a fast gain to 55,000 units sold last year. The estimate for 1953 is 68,000.

Production of packaged units has not only grown, it is changing from a seasonal to a year-round business. Winter used to be a slow season, but in the first quarter of 1953 all contractors reported abnormally high billings for this type of unit.

• **Carrier says**—Packaged units are not the only type whose sales curve is rising. Central systems for commercial and industrial use also show a continued rate of growth. Retail sales have increased an average of 15% annually since World War II—and should be near $2 billion annually by 1963. Carrier expects that sales of packaged units, on the other hand, will total only $0.5 billion in 1963.

Last year, retail sales of central-station equipment were $450 million, as opposed to $127 million for packaged units.

• **GE says**—Engineers have been accustomed to consider packaged units as suitable only for fairly small areas, such as retail stores, single rooms, and offices. But multiple-unit installations are now serving large areas. They've been set up successfully in factories, industrial plants, hospitals, banks, hotels, schools, supermarkets, theaters, airport administration buildings, bus stations, auditoriums, and rail terminals. This indicates that packaged units are practical in much larger buildings than has previously been realized.

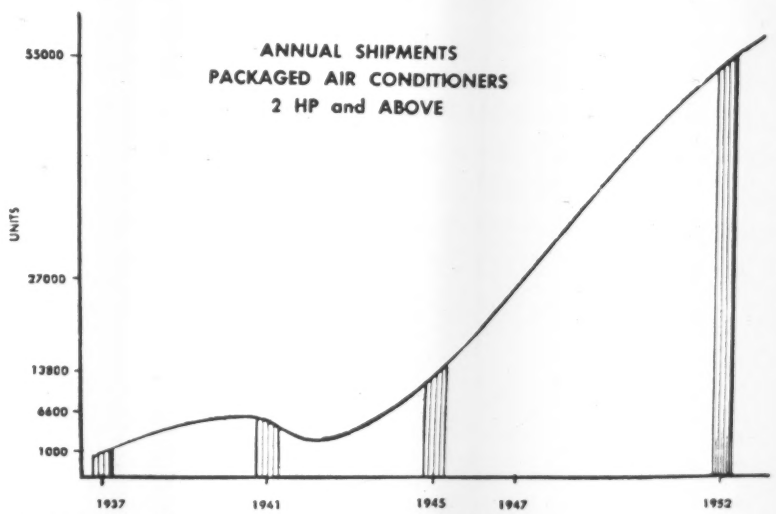
Packaged units, in all probability, will be a major contender in the future new-building market just as they are today in the modernization field. They are bound to affect building-design trends.

• **Carrier says**—Generally, packaged units are indicated for (1) a single room or group of rooms, such as a suite of offices that a tenant is air conditioning for himself; (2) commercial establishments, particularly small ones.

The bulk of packaged-unit sales in the 2-to-20 hp class, excluding residences, goes into stores, restaurants and office suites. But many commercial establishments, particularly the larger ones and those occupied by building owners, find central systems more advisable.

True, the larger packaged units provide flexibility, permitting easy and satisfactory partial air conditioning of structures. But this situation exists where only certain rooms in a space consisting of many rooms are to be conditioned. Another situation important in packaged-unit sales is the case of the short-term tenant purchasing his own equipment, since he usually can take packaged units with him if he moves.

Central-system equipment is indicated for (1) new multi-room, multi-story buildings; (2) existing multi-room, multi-story buildings where the heating system is approaching obsolescence, or where interior space is not considered first-class due to improper ventilation; (3) most industrial plants, particularly large ones and those where separate control of temperature and



AIR-CONDITIONER shipments as estimated by General Electric.

humidity is required for process control, as in the textile industry.

• **GE says**—The least expensive and simplest application of packaged units—as well as the most common one—is against the wall in the space to be conditioned. But frequently, installations are made in closets or other adjoining space, air being delivered to the conditioned area by short duct runs. Ductwork, generally not installed for smaller units, is often desirable for larger models, however.

Occasionally, floor space is very limited. Then, the units may be placed overhead. One possibility, not to be overlooked in a high-ceiling building, is the mounting of one or more units overhead on girders or trusses. In new buildings or modernization work, it is often possible to have completely recessed units.

• **Carrier says**—Essentially, packaged units are complete in themselves, containing miniature machine rooms within the cabinets. They provide an important service for the small contractor, in that much of the risky element of determining on-the-job labor costs is eliminated. In addition, much of the engineering involved in matching components already has been taken care of in the factory.

At the same time, this fixed design limits applications. As normally produced, packaged units are not designed to control temperature and humidity separately—an extremely important factor in many industrial installations. They can be equipped with reheat coils, humidifiers and special controls for close regulation of temperature and humidity in small laboratories and other applications. But generally these are not used for large industrial requirements.

• **GE says**—With packaged units, provision often must be made for supplementary winter heating. On most of the conditioners (3 hp and larger), facilities are provided for installing heating or tempering hot-water or steam coils.

Coolers are often installed in parallel with a warm-air furnace. This is particularly true with 2-hp units, where space limitations prevent provision for steam or hot-water coils. Also, in existing buildings where warm-air furnaces are already installed, parallel ducts with suitable dampers for winter and summer change-over are used with good results.

"Muggy weather" control on units—at no extra cost—takes excessive moisture from the air without overchilling.

• **Carrier says**—In almost every individual case, a comparison of available equipment should be made from the mechanical, operational and price viewpoint, to determine the best type of installation.

Both ends of the business are growing substantially, and—depending on the situation—each system has important advantages. It is wise to consult firms handling a full line of all types of equipment before contracting for a specific job.

• **GE says**—There are a great many points to be considered in the design

CONSTRUCTION TRENDS

Some segments of construction will feel it, if the general business boom tops off

There's a growing feeling among businessmen and economists that we now are at—or just over—the crest of the postwar boom. This doesn't mean they feel a real recession is inevitable. Sturdy activity in construction is one of the major strong points in the business outlook. But even a mild decline in general business could hurt some sections of the construction industry. For, in spite of the impressive gain in industrial production during the past few years, the superboom is concentrated in fairly narrow segments of the economy.

Production is highest in those fields that benefit from: (1) high military spending, (2) high capital outlay by defense industries, and (3) intense demand for heavy durables—most notably automobiles. Lower production in any or all of these fields could aggravate the modest declines in industrial and residential construction which many observers are expecting in the second half, anyway. And if it went far enough, it could hurt commercial construction.

What are the prospects for lower production in these major industrial segments? Military spending will stay high at least through mid-1954. But after that, it can't be counted on to keep overall industrial output at a boom level. For new orders placed by the military are down sharply.

According to the Dept. of Commerce, industry will spend a record $27 billion for plant and equipment this year. But some industries—iron and steel, nonferrous metals, and the railroads—are expected to cut down. Also, many defense expansion programs are getting near completion. About 90% of the programs covered by accelerated amortization will be in place by the end of this year. So, a year from now, capital expenditures may not be high enough to keep total industrial output rolling at its present tempo.

Auto production in the first half of this year was at an annual rate of 6.5 million. But many observers expect it may fall off 25% in the second half. Of course, new and attractive 1954 models could restore production in the opening months of next year. But it's by no means certain that consumers will keep on spending 6% of their income on cars. This is twice as large a percentage of personal income as they spent on cars before World War II.

Even leaving these factors aside, there are weak spots in other sectors of the economy. Farm prices, for instance, are falling. That hurts farm income. Consumer credit, which represents borrowing from future income to buy things now, is at record levels.

However, consumer spending and personal income are now at peak levels. And, in the construction field, the outlook for highway, school, and public utility construction is exceptionally good.

Even if consumer buying does turn down a bit, and businessmen have to work harder to sell their products, that should help commercial construction. For, up to a point, retailers would emphasize modernization of stores and building of suburban centers to push their goods. But if a business turndown went far enough, there would be fast cutbacks in commercial, industrial and residential building.

But if the economy continues to display the remarkable balance that has characterized business activity in recent years, the construction industry will be both a prop under, and beneficiary of, brisk levels of overall industry activity.

of a multiple-unit system. Careful engineering, however, will overcome installation obstacles.

No large installation should be undertaken without calling in a consulting engineer. This applies to installations of packaged coolers, just as it does to a large central plant. The future of this rapidly growing market depends on adequate design and competent installation personnel.

• **Use in modernization**—One example of what can be done with multiple units is the National City Bank of New York in Havana, Cuba. Many problems were encountered in air conditioning this 3-story, half-block-long building.

The bank—bordered on three sides by busy streets and on the fourth by another building—is everything a building should not be for a successful air-conditioning installation. A structure with a complicated architectural treatment, it measures 186 ft x 109 ft by 38 ft high, of which 390,000 cu ft is air conditioned. The main banking foyer occupies the center part and extends the full building height.

A packaged system seemed to be the most appropriate from practically all points of view. With a central system, ducts would have been complicated.

A total of 29 packaged units were distributed throughout the building. Of these, 24 are standard 3-hp units and five are 5-hp models.

Condensing requirements are handled by a 100-ton cooling tower mounted on the roof. Two pumps circulate water from the tower to the conditioners. Because the bank management asked that no lines be exposed in the building, water pipes and electric conduit are run over the roof.

An interesting feature of the application is that no effort was made to condition the air in the high-ceiling space above the tellers' cages. The air is directed at occupied space, leaving a stratified atmosphere over the space conditioned. Ducts are installed only in this region.

Entire cost of the system—including transportation, Cuban customs duties, cooling tower, ducts, pumps, controls and installation—was about $80,000 or $826 per hp.

• **Use in new building**—Another example of multiple-unit application is the one for Modern Handcraft Co.'s new plant in Kansas City, Mo. Building is 185 ft x 152 ft in plan, 2 stories high.

Air conditioning was the Number One "must" in instructions given to architects. One reason was the recognized 25% loss in employee efficiency during hot and humid weather. Also—since the firm is primarily concerned with publication of magazines—controlled humidity was needed to protect printing paper.

A further problem was the fact that the number of employees varies from 150 to 300 at various seasons of the year. This meant that the quantity of air conditioning supplied had to be variable. After a comparison of cooling methods had been made, multiple units were selected.

The only ductwork will be a fresh-air intake to each unit. Any future remodeling can be easily accomplished since there will be no expensive ducts to salvage.

Five 5-hp conditioners and two induced-draft cooling towers are being installed for cooling. Heating will be accomplished by 28 gas-fired unit heaters, eight of these to be supplied with fresh air.

When completed, the building—with an area of 46,000 sq ft and 300 employees—will have a thermostatically controlled air-conditioning system the year round for $460 per ton. Amortized over a 10-year period, this amounts to 4 cents a day per employee (operation cost of $2,850 per season is not included).

Peter Kiewit buys interest in New York building firm

Peter Kiewit, president of Peter Kiewit Sons' Co., Omaha, has made a "substantial" purchase of common stock of Arthur A. Johnson, New York City engineers and contractors. However, A. A. Johnson spokesmen say Kiewit's stockholding is not large enough to give him control.

As a result, he declared that present policies and management of the firm will continue without major changes being made.

The bulk of Kiewit's stock was purchased from the estate of the late Kate Johnson, wife of Arthur A. Johnson, president and founder of the company.

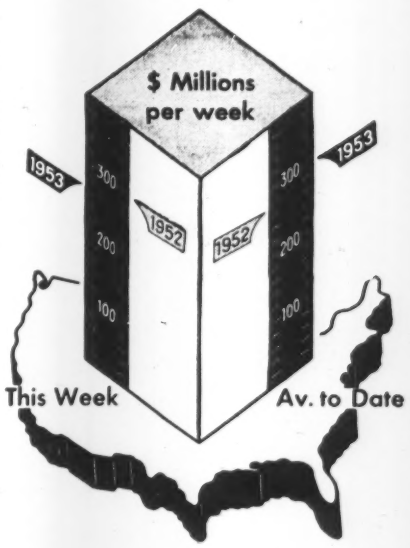
The sale took place as part of the settlement of her estate.

The Johnson company says that Kiewit's stock interest "will permit a closer co-operation between the companies and joint venturers, and lead to further diversification and expansion of the activities of the Johnson company."

The Kiewit and Johnson firms have been co-bidders on various jobs in the past, but have never actually worked together.

Activity This Week

As reported to ENR (in millions of dollars)



Amount of contracts let

	This Week	Cumulative 29 wks 1953	1952	% chge
Federal	$34.4	$917.4	$1,333.4	−31
State and municipal	81.0	2,835.9	2,396.5	+18
Total pub.	115.4	3,753.3	3,729.9	+1
Total priv.	148.8	4,930.4	3,953.5	+25
U. S. total	**$264.2**	**$8,683.7**	**$7,683.4**	**+13**
Contracts by type of work				
Waterworks	$3.8	$134.4	$132.3	+2
Sewerage	11.4	219.2	150.0	+46
Bridges	6.4	411.0	217.7	+89
Highways	34.4	1,007.6	865.1	+16
Earthwork, waterways	8.3	238.6	308.8	−23
Buildings:				
Public, excl. hsg.	29.8	972.9	1,145.9	−15
Housg., pub.	3.6	281.7	457.6	−38
Housg., priv.	58.1	2,197.7	1,687.4	+30
Commercial	52.7	635.7	357.1	+78
Industrial	25.7	1,528.6	1,617.2	−5
Unclassified	30.0	1,056.1	744.3	+42
Total	**$264.2**	**$8,683.7**	**$7,683.4**	**+13**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Years = 100 1913	1926	1949
Construction cost	**Jul**	**604.10**	**290.39**	**126.64**
	Jun	593.17	285.14	124.35
Building cost	**Jul**	**435.28**	**235.19**	**123.73**
	Jun	426.27	230.43	121.17
Volume	**Jun**	**572**	**233**	**165**

OFFICIAL PROPOSALS

Bids: July 23, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 23rd day of July 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York				
Albany	R.C. 53-91	Shakers-Watervliet, S.H. 879	2.68	Asp. Conc. Ty. 1A, Opt.	$6,000 Plans $10	$108,000
		DISTRICT No. 2				
		L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, New York				
Oneida	FARC 53-85	Waterville-New Hartford Pt. 1, S.H. 8277; Project No. F-436(4)	5.70	Asp. Conc. Ty. 1A, Opt.	$16,000 Plans $10	290,000
Oneida	FASS 52-1 Completion	Steuben-Remsen (Co. Rd.) (Completion Contract); Project No. S-363(1)	3.99	Graded Gravel D.S.T.	$8,500 Plans $15	157,000
		DISTRICT No. 3				
		William Robinson, District Engineer, 301 E. Water Street, Syracuse, New York				
Cayuga	FARC 53-81	Moravia-Niles, S.H. 591; Groton-Locke-Moravia, S.H. 1016; Project No. S-424(1)	5.31	Asp. Conc. Ty. 1A, Opt.	$15,000 Plans $10	268,000
		DISTRICT No. 6				
		James H. Thomas, District Engineer, 30 West Main Street, Hornell, New York				
Allegany	FARC 53-78	Andover-Greenwood Pt. 1, S.H. 9044; Project No. S-416(1)	2.82	Asp. Conc. Ty. 1A, Opt.	$10,000 Plans $10	175,000
Steuben	FASS 53-7	Village of Canisteo-Depot St. (Co. Rd. 29); Project No. S-301(1)	0.19	Asp. Conc. Ty. 1A, Opt. 3 Sp. Comp. I-Beam Br. 187.5'	$15,000 Plans $10	277,000
		DISTRICT No. 7				
		R. W. Sweet, District Engineer, 144 Van Duzee St., Watertown, New York				
Franklin Jefferson Lewis St. Lawrence	R.C. 53-80	Br. No. 1, S.H. 985A; Br. No. 2, S.H. 8135; Br. No. 2, S.H. 428; Br. No. 4, S.H. 5332B; Br. No. 1, S.H. 5285; Br. No. 1, S. H. 8113; Br. No. 1, S.H. 1264; Br. No. 1, S.H. 1587;		Painting 8 Bridges	$1,100 Plans $10	21,000
St. Law.	FARC 53-79	Morristown-Hammond Pt. 2, S.H. 970A; Project No. F-650(3)	0.68	Asp. Conc. Ty. 1A, Opt.	$6,000 Plans $10	104,000
St. Law.	FARC 53-84	Seveys Corners-Colton Pt. 2, S.H. 8199; Project F-353(5)	4.40	Asp. Conc. Ty. 1A, Opt.	$13,000 Plans $15	244,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, New York				
Columbia	FARC 53-92	Grade Crossing Elimination of the N.Y.C.R.R. with Hollowville-Craryville, S.H. 763; Project Nos. FG-F-564(4)	0.95	Asp. Conc. Ty. 1A, Opt. R.R. Sep. Comp. Built-up Beam 180'	$40,000 Plans $15	735,000
Dutchess	FARC 53-59	Fishkill-Hughsonville, S.H. 551; Hughsonville, S.H. 222; Project No. S-419(1)	6.19	Asp. Conc. Ty. 1A. Opt.	$23,000 Plans $10	375,000
Ulster	FARC 53-61	New Paltz-Rifton, S.H. 308; Project No. F-613(9)	3.02	Asp. Conc. Ty. 1A, Opt.	$12,000 Plans $10	223,000
Westchester	S.W.C. 53-1	New York State Thruway—Southern Westchester Connection Sub. 11 (N.Y. City Line-Tuckahoe Rd.)	1.25	Storm Water Interceptors & Misc. Work	$70,000 Plans $15	1,183,000
		DISTRICT No. 9				
		F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, New York				
Chenango	FARC 53-86	North Norwich-Sherburne, S.H. 5121; Sherburne Village, S.H. 5391; Project No. F-456(5)	2.98	Asp. Conc. Ty. 1A, Opt.	$10,000 Plans $10	177,000
Sullivan	BWS 53-X	New York City—Board of Water Supply Road "X" Town Highway No. 69 (Neversink Reservoir)	1.05	Bit. Mac. Pen. Ty. I	$8,000 Plans $10	131,000
		DISTRICT No. 10				
		M. E. Gogl, District Engineer, Montauk Highway, Babylon, L.I., New York				
Suffolk	FARC 53-87	Southampton-Bridgehampton, S.H. 1789; Bridgehampton-Devon, Pt. 1, S.H. 1495; Project No. F-559(8)	0.73	Asp. conc. Ty. 1A, Opt. = 0.69 Mi. Misc. Work = 0.04 Mi.	$10,000 Plans $10	180,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: August 7, 1953

General Construction Superstructures & Equipment

CONTRACT 688—GENERAL CONTRACT SUPERSTRUCTURES AND EQUIPMENT
CONTRACT 688E—ELECTRICAL EQUIPMENT
CONTRACT 688H—HEATING AND VENTILATING
CONTRACT 688P—PLUMBING AND GAS FITTING
For THE WESTCHESTER COUNTY, NEW YORK SANITARY SEWER DISTRICT OF NEW ROCHELLE SEWAGE TREATMENT PLANT

Sealed bids will be received in Room 508, County Office Building, White Plains, New York until 10:00 A.M. August 7, 1953 (Eastern Daylight Saving Time) immediately after which the bids will be publicly opened and read in Room 808 of said Building.

Under previous contracts, pipe lines and sub-structures for a primary sewage treatment plant have been nearly completed.

The work under the General Contract 688 will include brick and concrete superstructures for three large and seven small buildings having a cubical contents of 800,000 cubic feet. The equipment to be installed consists of pumps, grit ejector, mechanical sludge collecting system for primary settling and elutriation tanks, digester equipment, sludge filters, incinerators and stack, spherical gas holder, laboratory, metering and chlorinating equipment for a designed population of 81,000 and flow of 31.5 M.G.D.

The work under the Electrical Contract 688 E, the Heating and Ventilating Contract 688 H, and the Plumbing and Gas Fitting Contract 688 P consists of the remaining work necessary to place the sewage treatment plant in operation.

All contract documents may be seen at Room 508, County Office Building. Bidders may procure plans and specifications for any of the four contracts upon a cash deposit of

CONTRACT 688 ..... $50.00
CONTRACTS 688 E, 688 H and 688 P $20.00

which deposit will be refunded to bidders only, provided that all plans and copies of specifications are returned in good condition within thirty days after award of the Contract or rejection of bids.

All bids must be accompanied by a certified check, payable to the County of Westchester, New York, in the following amounts:

For CONTRACT 688 ..... $75,000.00
For CONTRACT 688 E and 688 P ..... 10,000.00 each
For CONTRACT 688 H 5,000.00

The County reserves the right to waive any informalities in the bids, or to reject any and all bids. No bidder may withdraw his bid within forty-five days after the actual opening thereof.

DEPARTMENT OF PUBLIC WORKS
COUNTY OF WESTCHESTER
BY: JAMES C. HARDING
COMMISSIONER

Bids: August 25, 1953

Change of Bid Date

FILTER BUILDING, WEIR CHAMBER, WASH WATER BUILDING SWITCH HOUSE AND OFFICE BUILDING NORTHEAST STATION FOR THE DEPARTMENT OF WATER SUPPLY CITY OF DETROIT, MICHIGAN CONTRACT NO. NE-6

IMPORTANT NOTICE: The time of receiving bids for the construction of the Filter Building, Weir Chamber, Wash Water Building, Switch House and Office Building as advertised in the June 25, 1953 and July 2, 1953 issues of Engineering News-Record has been changed from 10:00 A.M. Eastern Standard Time, August 11, 1953 to 2:30 P.M. Eastern Standard Time, August 25, 1953.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
George A. Shaffer, President
Alfred J. Simpson, Vice-President
Harvey A. Wagner
Oscar A. Wagner
L. G. Lenhardt, Superintendent, General Manager and Chief Engineer
E. H. Hauer
Acting Secretary

(Additional Proposals on pages 155 and 156)

OFFICIAL PROPOSALS

Bids: October 12, 1953

Subcontract for Two Regulating Valves

IRAQ GOVERNMENT—DEVELOPMENT BOARD
DOKAN SCHEME

1. Acting on behalf of the Development Board of the Government of Iraq, tenders are invited by Messrs: Binnie, Deacon & Gourley of London for a subcontract for the supply and installation of two regulating valves each 2.286 metres (90") internal diameter for controlling the discharge from two tunnel outlets at a dam to be constructed at Dokan on the Lesser Zab river.
2. It is anticipated that the main contract for the civil engineering work will be awarded towards the end of the year 1953 and the successful tenderer will be required to enter into a contract with the Main Contractors immediately after the main civil engineering contract is signed.
3. The Contract Documents for the main civil engineering contract, which include a specification for the two regulating valves, and Instructions to the Main Contractors for entering into a subcontract for the same, may be inspected at any of the following places, namely:—
   (a) The Offices of the Development Board, Baghdad.
   (b) The Iraqi Embassy, London.
   (c) The Iraqi Embassy, Washington.
   (d) The Royal Iraqi Legation, Paris.
   (e) The Royal Iraqi Legation, Brussels.
   (f) The Royal Iraqi Legation, Rome.
   (g) The Head Office of Messrs: Binnie, Deacon & Gourley, Artillery House, Artillery Row, London, S. W. 1, England.
4. Firms desiring to tender may obtain copies of the Contract Documents for the main civil engineering contract, also copies of all amendments to the specification and drawings for the two regulating valves made subsequent to the preparation of the said Contract Documents & Drawings, from Messrs: Binnie, Deacon & Gourley of London upon payment of Twenty Pounds Sterling.
5. Tenders must be written in English and must be submitted in quadruplicate to Messrs: Binnie, Deacon & Gourley of London and will be received up to noon on the twelfth day of October 1953.
6. Tenders must be accompanied by full particulars of the tenderer's facilities for undertaking the work and experience of executing work of a similar character and magnitude.

BINNIE, DEACON & GOURLEY,
Consulting Engineers,
Artillery House,
Artillery Row,
Westminster,
London, S.W.1.

Bids: October 26, 1953

Subcontract for Steel Linings for Tunnels and Conduits

IRAQ GOVERNMENT—DEVELOPMENT BOARD
DOKAN SCHEME

1. Acting on behalf of the Development Board of the Government of Iraq, tenders are invited by Messrs: Binnie, Deacon & Gourley of London for a subcontract for the supply and installation of steel linings for two tunnels, approximately 2.3 metres diameter, and five conduits of 3.65 metres diameter for a dam to be constructed at Dokan on the Lesser Zab river.
2. It is anticipated that the main contract for the civil engineering work will be awarded towards the end of the year 1953 and the successful tenderer will be required to enter into a contract with the Main Contractors immediately after the main civil engineering contract is signed.
3. The Contract Documents for the main civil engineering contract, which include a specification for the steel linings, and Instructions to the Main Contractors for entering into a subcontract for the same, may be inspected at any of the following places, namely:—
   (a) The Offices of the Development Board, Baghdad.
   (b) The Iraqi Embassy, London.
   (c) The Iraqi Embassy, Washington.
   (d) The Royal Iraqi Legation, Paris.
   (e) The Royal Iraqi Legation, Brussels.
   (f) The Royal Iraqi Legation, Rome.
   (g) The Head Office of Messrs: Binnie, Deacon & Gourley, Artillery House, Artillery Row, London S.W.1, England.

OFFICIAL PROPOSALS

4. Firms desiring to tender may obtain copies of the Contract Documents for the main civil engineering contract, also copies of all amendments to the specification and drawings for the steel linings made subsequent to the preparation of the said Contract Documents and Drawings, from Messrs: Binnie, Deacon & Gourley in London upon payment of Twenty Pounds Sterling.
5. Tenders must be written in English and must be submitted in quadruplicate to Messrs: Binnie, Deacon & Gourley of London and will be received up to noon on the twenty-sixth day of October 1953.
6. Tenders must be accompanied by full particulars of the tenderer's facilities for undertaking the work and experience of executing work of a similar character and magnitude.

BINNIE, DEACON & GOURLEY,
Consulting Engineers,
Artillery House,
Artillery Row,
Westminster,
London, S.W.1.

Bids: July 28, 1953

Contract No. 34, 34A, 34B, 34C

The work to be done under Contract 34 consists generally in the construction of 26 reinforced concrete bridge decks on steel superstructure erected by others and includes the erection of pipe railing and furnishing and installing hanger assemblies for utilities. The work is located between mile 20 near Ghent, Raleigh County, and mile 48 near Lively, Fayette County, West Virginia and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

Contract 34 consists of the combined quantities of Contracts 34A, 34B, and 34C. The Principal items of work include:

	Approximate Quantity		
	34A	34B	34C
Concrete.....	880 C.Y.	2,410 C.Y.	2,670 C.Y.
Reinforcing Steel	188,000 Lbs.	557,000 Lbs.	610,000 Lbs.
Erecting Pipe Railing.....	1,710 Lin.Ft.	4,500 Lin.Ft.	5,340 Lin.Ft

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A. M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia until 10:00 A. M. Eastern Standard Time, on July 28, 1953, at which time and place said proposals will be publicly opened and read.

WEST VIRGINIA TURNPIKE COMMISSION
D. H. Morton,
Chairman

Bids: August 12, 1953

Flocculators and Settling Basins

AKRON, OHIO

Sealed bids or proposals for "Constructing Flocculators and Additional Settling Basins, and Related Work, Contract No. 404" will be received at the office of the Director of Public Service, Room 203, Municipal Building, Akron, Ohio, until twelve o'clock noon, Eastern Standard Time, or 1 P.M. Eastern Daylight Savings Time on August 19, 1953, and at that time and place will be publicly opened and read.

The proposed Flocculators and Additional Settling Basins will be part of the City's Cuyahoga River Water Supply System, located in Portage County, Ohio, about two miles north of the City of Kent.

The Contract involves the construction of reinforced concrete Basins of about 43,000 sq. ft. floor area and about 12 ft. water depth, and the furnishing and installing of the flocculating and sludge removal equipment, piping and accessories; together with the construction of about 240 lin. ft. of 60 inch and 84 inch concrete pipe line, and various minor items of related work.

The Drawings, Specifications and Information and Instructions for Bidders, and the Proposal, Contract and Bond forms are on file and may be seen at the office of the Director of Public Service, Municipal Building, Akron, Ohio. Copies may be obtained at the office of the Bureau of Water and Sewerage, Room 404, Municipal Building, Akron, Ohio, or at the office of Parsons, Brinckerhoff, Hall and Macdonald, Engineers, 51 Broadway, New York, New York, upon deposit of twenty-five dollars, which sum will be refunded upon return of the

OFFICIAL PROPOSALS

Drawings and Specifications in good condition.

All proposals must be submitted upon the blank form and in accordance with the instructions furnished by the City.

Each proposal must be accompanied by a certified or cashier's check on a National or State bank in the sum of Fifty Thousand Dollars ($50,000.00).

A bond in the sum of the full amount of the Contract, with satisfactory surety, will be required for the faithful performance of the Contract.

The Director of Public Service reserves the right to reject any or all bids, and to waive any technical defects, as the interest of the City may require.

THE CITY OF AKRON, OHIO
By: M. L. Davis
Director of Public Service
W. R. LaDue
Superintendent & Chief Engineer
Russell M. Bird
Mayor-Manager
Parsons, Brinckerhoff, Hall & Macdonald—
G. Gale Dixon, Associate. Engineers.

Bids: July 20, 1953

Trunk Sanitary Sewer for the City of Lancaster Lancaster, Pennsylvania

Sealed proposals will be received by the City of Lancaster at the office of the City Controller in the Municipal Building, Lancaster, Pennsylvania until 10:00 A.M., Eastern Daylight Saving Time, July 20, 1953, at which place and hour they will be publicly opened and read. Proposals shall include the furnishing of all necessary labor, materials and equipment, and performing all work for the construction of a Trunk Sanitary Sewer approximately 9500 feet long.

Each proposal shall be accompanied by a certified check or a bid bond in an amount of not less than (10 per cent of the bid total.

Copies of the Contract Documents, including Drawings and Specifications will be on file for inspection purposes only at the office of the City Engineer, Municipal Building, Lancaster, Pennsylvania; they may also be seen at the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania, from whom they may be obtained, upon deposit of Twenty Dollars ($20.00) for each set. Full refund will be made to actual bidders only for return of one set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) per cent of deposit.

City of Lancaster
Lancaster,
Pennsylvania
Gannett Fleming Corddry &
Carpenter, Inc., Engineers,
600 North Second Street
Harrisburg, Pennsylvania

July 17, 1953

Sanitary Sewers

Rockford, Illinois—Board of Local Improvements Sanitary Sewers $22,624 on Ninth Street Bids July 17, 1953. Special Assessment Bonds.

Make Plans Accessible to Distant Bidders

Plans and specifications for inspection by distant bidders may be filed at any of ENGINEERING NEWS-RECORD offices without charge. Or a sufficient supply may be deposited at such of our offices as seem desirable subject to your usual requirements in the matter of deposits, etc. (We assume full responsibility for return of plans or collection and return of deposits).

OFFICIAL PROPOSALS

Bids: July 28, 1953

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for CONTRACTS NOS. 104-A, 104-B, 104-C, 104-D, 104-E and 104-F involving, respectively, General Construction Work; Structural Steel and Miscellaneous Metal Work; Heating, Ventilation and Refrigeration Work; Plumbing and Drainage Work; Electrical Work; and Restaurant Kitchen Equipment Work; all in connection with additions and alterations to the Service Building at Service Area 12-S, located on the New Jersey Turnpike in Hudson County.

Proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, on the morning of July 28, 1953 until 11.00 A. M., Eastern Daylight Saving Time, at which time and place said proposals will be publicly opened and read.

The receipt and opening of proposals are subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposals a revised financial statement and a statement of plant and equipment.

Contract documents may be seen and inspected by prospective bidders during office hours after July 9, 1953 at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, and at the office of the General Architects, Alfred Fellheimer and Steward Wagner, 155 East Forty-Second Street, New York 17, New York.

Contract documents will be furnished on the payment of Five Dollars for each set, upon application to the New Jersey Turnpike Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for the Construction of the New Jersey Turnpike, Second Edition, August 1950, and must be enclosed in sealed, specially addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a Certified Check drawn to the order of the New Jersey Turnpike Authority, and a Proposal Bond, each for not less than five percent of the amount of the proposal, but not less than Five Hundred Dollars nor more than Two Hundred Thousand Dollars, and must be delivered at the place designated above on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement, and for the plant and equipment statement to be submitted with the proposal and of the specially addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the proposals rejected within thirty days from the date of opening proposals. The right is reserved to reject any or all proposals or to accept that proposal which, in its sole judgment, the Authority deems to be in its best interests.

NEW JERSEY TURNPIKE AUTHORITY
July 9, 1953 Paul L. Troast, Chairman

GOV. OF DIST. OF COL., DIR. OF HIGHWAYS, D. C., July 15, 1953. SEALED PROPOSALS will be recd. in Rm. 404, 499 Pa. Ave., N. W., Wash. 1, D. C., until 2 PM, DST, August 19, 1953, and then publicly opened and read for construct. an underpass and a trunk sewer on E. Cap. St. under 19 tracks of the Penna. and B. & O. Railroads, with an encased steel beam superstructure on reinf. conc. abutments and pier. (Fed. Aid Proj. U-UG 42-(4). Proj. length is 524 ft. Approx. quantities of major items in the underpass are: 47,000 cu. yds. excavation, 9,800 cu. yds. conc., 520,000 lbs. reinf. steel, and 2,230,000 lbs. structural steel. Approx. quantities in the 15' x 10'-6" trunk sewer: 8,200 cu. yds. excavation, 1,600 cu. yds. conc. and 315,000 lbs. reinf. steel. Proposal forms, plans and specns. obtainable, upon deposit of Cert. Check, payable to Collector of Taxes, D. C., for $50.00 per set, from Supervisor, Contr. Sec., Procurement Office, D. C., Rm. 406—499 Pa. Ave., N. W. (Tel. NA 8-6000, Ext. 2378).

OFFICIAL PROPOSALS

Bids: October 19, 1953

Subcontract for One Emergency Gate and One Heavy Duty Crest Crane

IRAQ GOVERNMENT—DEVELOPMENT BOARD
DOKAN SCHEME

1. Acting on behalf of the Development Board of the Government of Iraq, tenders are invited by Messrs. Binnie, Deacon & Gourley of London for a subcontract for the supply and installation of an emergency gate and a heavy duty crest crane for transporting, lowering and lifting the gate, guides and reception frames for two tunnels 2.3 metres diameter and five conduits 3.65 metres diameter, also transition sections for the conduits for a dam to be constructed at Dokan on the Lesser Zab river.
2. It is anticipated that the main contract for the civil engineering work will be awarded towards the end of the year 1953 and the successful tenderer will be required to enter into a contract with the Main Contractors immediately after the main civil engineering contract is signed.
3. The Contract Documents for the main civil engineering contract, which include a specification for the emergency gate, the heavy duty crest crane and ancillaries, and Instructions to the Main Contractors for entering into a subcontract for the same, may be inspected at any of the following places, namely:—
   (a) The Offices of the Development Board, Baghdad.
   (b) The Iraqi Embassy, London.
   (c) The Iraqi Embassy, Washington.
   (d) The Royal Iraqi Legation, Paris.
   (e) The Royal Iraqi Legation, Brussels.
   (f) The Royal Iraqi Legation, Rome.
   (g) The Head Office of Messrs. Binnie, Deacon & Gourley, Artillery House, Artillery Row, London S.W.1, England.
4. Firms desiring to tender may obtain copies of the Contract Documents for the main civil engineering contract, also copies of all amendments to the specification made subsequent to the preparation of the said Contract Documents & Drawings, from Messrs: Binnie, Deacon & Gourley in London upon payment of Twenty Pounds Sterling.
5. Tenders must be written in English and must be submitted in quadruplicate to Messrs: Binnie, Deacon & Gourley of London and will be received up to noon on the nineteenth day of October 1953.
6. Tenders must be accompanied by full particulars of the tenderer's facilities for undertaking the work and experience of executing work of a similar character and magnitude.

BINNIE, DEACON & GOURLEY,
Consulting Engineers,
Artillery House,
Artillery Row,
Westminster,
London, S.W.1.

Bids: July 28, 1953

Missouri River Bridge at Leavenworth, Kansas

NOTICE TO BIDDERS

1. Sealed bids will be received until 7:30 P. M. C. S. T. July 28, 1953, by the City Clerk at his office in the City Hall, Leavenworth, Kansas, and then publicly opened, for construction of three river piers of the above named bridge, in accordance with the specifications, drawings and addenda.
2. The work for which bids are requested includes three concrete river piers, with the following principal quantities: Concrete, 4,500 cu yd; reinforcing steel, 140,000 lb.
3. Each bid shall be accompanied by a cashier's or certified check, payable to the City, in an amount not less than five per cent of the total amount of the proposal. Bids and cashier's or certified checks may be held for a period of not more than sixty days after the date of opening; thereafter cashier's or certified checks will be returned to bidders not awarded contracts.
4. After receiving notice to proceed, construction of the piers shall be completed in 270 calendar days; delays must be compensated by liquidated damages; performance bond will be required.
5. Copies of plans and specifications are on file and may be examined at the office of the Consulting Engineer, Howard, Needles, Tammen & Bergendoff, 1805 Grand Avenue, Kansas City, Missouri. Prospective bidders will be supplied with two sets of plans and two copies of the specifications upon depositing $25.00 with the Consulting Engineer, which will be refunded upon return of the documents. Prospective bidders may secure extra copies of prints at 50 cents each and extra copies of specifications for $2.00 per copy.
6. Bids containing escalation and redetermination clauses will not be considered. The Owner reserves the right to reject any and all bids and to make the award without technicalities as to procedure.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
Consulting Engineers
1805 Grand Avenue
Kansas City, Missouri

OFFICIAL PROPOSALS

Bids: July 30, 1953

Soil Exploration & Foundation Investigations

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M. Eastern Daylight Saving Time, on July 30, 1953 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, NEW ENGLAND SECTION, NEW ROCHELLE TO CONNECTICUT STATE LINE, WESTCHESTER COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-56

Maps, plans and specifications may be examined and obtained at the following offices:
(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $34,700.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposals must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,735.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Bids: July 28, 1953

Repairs and Painting of Water Storage Tank

for the Massapequa Water District
Massapequa, L.I., N.Y.

Sealed bids for the repairs and painting of water storage tank at Massapequa Park, L.I., N.Y. will be received at the office of the Massapequa Water District until 8:00 p.m., D.S.T., at which time and place they will be read.

Contract documents may be obtained at the office of the Water District, 84 Grand Avenue, Massapequa, N.Y., upon depositing the sum of $25.00, which will be refunded to bidders.

Board of Water Commissioners
July 7, 1953 Roger C. Hough, Chairman

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

WATER POLLUTION CONTROL ENGINEERS

1. Positions in California state government at Bishop and Indio.
2. Salary range $6060 to $7356.
3. Candidates must possess California professional engineers license.
4. Requires college engineering degree and three years experience related to treatment and disposal of sewage and industrial wastes including one year supervisory or administrative experience making public contacts or official contacts with government agencies.

Write now to Recruitment Section, State Personnel Board, 1015 L Street, Sacto.

REPLIES (Box No.'s): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—EXPERIENCED miners for sewer tunnel, in clay type earth formation, at Charleston, West Virginia. Contact Nance & Vivadelli, 2420 Wilson Boulevard, Arlington, Virginia. Jackson 7-7749.

GENERAL CONSTRUCTION Estimator. We have an opening for an estimator who has had extensive experience in Commercial and Industrial building construction. Graduate engineer preferred but not required. Salary $125.00 to $150.00. Send complete resume of experience and references. Address reply to P.O. Box 5167, Memphis, Tenn.

WANTED:—EXPERIENCED Superintendent for highway construction in New Hampshire. Excellent opportunity with fast growing concern. Permanent year-round employment. State experience and salary desired. P-8440, Engineering News-Record.

PERMANENT POSITION with a progressive Western Ohio outfit available to a civil engineer, 30 to 40 years old. Position requires occasional travel. Experience in hydraulics desirable but not necessary. Applicants please give complete information including experience, current and past earnings, together with age, marital status, height, weight. Photograph optional. P-8289, Engineering News-Record.

WANTED CONSTRUCTION Engineer and Estimator by General Contracting firm located in eastern West Virginia. Must have experience in estimating all types of construction, purchasing and expediting material. If interested, advise age, education, salary desired. This is an excellent opportunity. P-8312, Engineering News-Record.

RESIDENT ENGINEER and Engineer Inspector of river intake pump stations, water treatment plant, water mains, elevated storage tanks, and reservoirs—two (2) year assignment for the City of Logansport, Indiana. Construction to start about August 1, 1953. Submit applications and experience record with salary requirements to Mr. Robert Price, Supt. of Utilities, City Hall, Logansport, Indiana immediately.

WANTED CONSTRUCTION Superintendent for work in Kansas, with experience in institutional and office buildings, industrial type buildings and government projects. Must be capable of taking complete charge of work. State starting salary, age and when available. P-8333, Engineering News-Record.

SALES MANAGER: Fine opportunity for right man with substantial company engaged in construction equipment field. To qualify must have experience in all branches of sales management including initiating product improvement and new products programs, directing field sales organization, building sound distributor organization and some knowledge of advertising and market forecasting. Send full particulars covering experience, education, etc. to P-8358, Engineering News-Record.

OPPORTUNITY FOR an energetic engineer with sales personality, 25 to 35 years of age for sales work with company Engineering and Rental Service. General Construction experience and some Engineering college training essential. Give full details in first letter to R. P. Wilkinson, Economy Forms Corporation, 4301 N.E. 14th St., Des Moines 13, Iowa.

STRUCTURAL ENGINEER. Permanent for small progressive structural engineering office in Connecticut. Must have minimum three years experience in structural design. Work includes design of schools—institutional, commercial, industrial structures of reinforced concrete and steel. Opportunity for right man; with possible business participation when proven. Give full details in first letter, education, outline of experience, and salary expected. P-8490, Engineering News-Record.

ENGINEER

Drafting Checker — Mechanical or Civil Engineer with a minimum of five years experience in design and detailing preferably in the chemical industry. Position entails checking of structural and process designs.

Cost Estimating Engineer—Chemical Engineer with 5/10 years experience in Chemical Process equipment design including some cost estimating experience. Responsible position involving cost estimating and design of new chemical processes.

Apply Director of Personnel

J. T. BAKER CHEMICAL COMPANY
PHILLIPSBURG, N. J.

POSITIONS VACANT

HIGHWAY ENGINEER, not over 40, fast and accurate, for layout work, computing quantities, permanent employment. Salary $6,500 per year. P-8371, Engineering News-Record.

ELECTRIC SUPERINTENDENT, Small independent electric system needs superintendent of generation and distribution, preferably with engineering degree, to supervise 11,000 Kilowatt Steam Plant and urban overhead system. Write all details to J. G. Cree, Borough of Chambersburg, Pennsylvania.

SELLING OPPORTUNITY OFFERED

SALES ENGINEERS—Albany, New York and Pittsburgh, Pennsylvania with established national concern selling prefabricated metal products to engineering and construction markets. Position offered is permanent and presents excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Age 24 to 30. SW-8254, Engineering News-Record.

POSITIONS WANTED

CHIEF ACCOUNTANT—Office Manager seeks position in Latin America; 10 yrs. experience in Latin America; 10 yrs. experience in U.S. countries on engrg. and construction projects handling accounting, office management. Legal liaison work. Fluent Spanish. Also 10 yrs. accounting experience in U. S. Age 43, married. PW-8336, Engineering News-Record.

IN CHICAGO graduate civil engineer, 28, desires position immediately involving engineering, business, and initiative. Experience: Five years design, construction, and business in South America. Speaks seven languages. PW-8183, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CIVIL ENGINEER—Age 39, B.S. degree, 14 years experience in both field and office on design and construction of roads, flood control dams, irrigation systems and industrial type buildings. Administrative status last 7 years. Thoroughly experienced in office engineering in large organization. Desire permanent connection. Prefer Midwest location. Present salary $7000. PW-8472, Engineering News-Record.

ESTIMATOR—C.E. 32, married, 8 years office and field experience in heavy construction work, including 3 years as independent G.C. Projects consisted of excavation, piling, concrete, masonry and carpentry. Desires position in N.Y. or N.J. Call LAurelton 5-3293 or write PW-8441, Engineering News-Record.

CONSTRUCTION ENGINEER—Graduate, married, age 27, 5 years experience as field engineer on highway, bridge and industrial construction. Desires perm. position, estimating and field work, with small to medium size firm. PW-8484, Engineering News-Record.

(Continued on page 158)

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

WANTED!!
Earthmoving Field
ENGINEERS

Responsible field positions within the continental United States are now available in connection with this Company's expanding sales program.

Earthmoving men with civil engineering degrees and experience in the application of heavy earthmoving equipment are desired.

Salary offered is commensurate with qualifications and experience. An account for traveling expenses is also provided. In addition, Company benefits including group hospitalization and life insurance plans, a contributory retirement plan, and annual paid vacations are available.

Send full particulars of education and business experience, with a recent photograph to—

Mr. J. B. Coogan
Sales Department
Caterpillar Tractor Co.
Peoria, Illinois

Income Plus Dignity

We are a financially sound organization with outstanding reputation among the "Who's Who" of American Industry. Our products are specified by engineering companies and purchased largely by industrial organizations. With an engineering background and a reasonable amount of time (no need to give up your present activity) you should be able to add to your income in a dignified, pleasant association. The opportunities are greater in an industrial area or community.
No samples to carry; no investment required; close cooperation and full territorial protection guaranteed.
Write us fully in confidence, including your professional and business associations and approximate time available.

RW-8457, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALES ENGINEER
Filters and related equipment

Chemical and General Industrial Fields in Northeastern Atlantic Coast States. Excellent opportunity with long established manufacturer. Reply giving full details.

SW-8119, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED—An experienced
CONSTRUCTION SUPERINTENDENT
To supervise erection of a 50,000 KW, 1450 psi addition to a power station and also a construction accountant for this work. Estimated time for construction 12 to 18 months. Construction to start January, 1954.

P-8139, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

EXPERIENCED
STRUCTURAL STEEL DETAILERS
Salary Commensurate with experience.
Darbyshire Steel Co., Inc.
P. O. Box 352 El Paso, Texas

(Additional Positions Vacant Ads on page 158)

EXPERIENCED STRUCTURAL STEEL DETAILERS AND CHECKERS

Permanent position with plenty of overtime; excellent working conditions in air conditioned drawing room. Paid holidays and vacation; liberal retirement pension benefits, life insurance. Give age, qualifications and phone number in first letter.

THE INGALLS IRON WORKS CO.
POST OFFICE BOX 2632
BIRMINGHAM, ALABAMA

DRAFTSMAN - CHIEF

Structural Steel Fabricating Shop

One capable of directing force of twenty men. Must be thoroughly experienced in modern shop methods. This company has been in business 30 years. Offices air conditioned. Steady work assured to right man.

THE MARYLAND STEEL PRODUCTS CO.
P. O. BOX 1997
BALTIMORE 3, MARYLAND

ESTIMATORS

Young engineers capable of mechanical estimating for construction of refineries, steam power and similar industrial projects. Must have some field experience.

Considerable weight given to ambition, intelligence and interest in estimating and cost analysis.

BECHTEL CORPORATION
220 Bush Street
San Francisco, California

BRIDGE DESIGNERS and DRAFTSMEN

For Consulting Engineer's Office, Location Great Lakes region.

Pleasant working surroundings with opportunity for professional development and advancement.

In reply state age, education, experience and rate of pay desired.

P-8462, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ENGINEERS

Structural, mechanical, and electrical for work on hydro-electric power developments. Write giving full experience record and qualifications.

HARZA ENGINEERING COMPANY
400 West Madison Street Chicago, Illinois

WANTED: TRAFFIC ENGINEER

Beginning salary $600 a month. Annual increases are automatic. Applicants must be registered professional engineers. Applications will be accepted until the needs of the service are filled. Write Personnel Division, City Hall, Madison 3, Wis.

POSITIONS WANTED
(Continued from page 157)

ATTENTION NORTH Jersey or New York City Contractors. Desire connection as General Supt., Estimator, Supt., or Project Engineer. Experienced heavy industrial, commercial and public buildings. C.E., P.E., age 39. Have the know how, the ability and the desire to preform successfully. Presently employed as project engineer on heavy construction project. PW-8447, Engineering News-Record.

QUALIFIED SENIOR Highway location construction engineer desires permanent position. Domestic or foreign. PW-8488, Engineering News-Record.

STRUCTURAL ENGINEER—Graduate C.E., Reg. P.E. in N.J., N.Y., Pa., & Mass.; 31, married, children. 7 years experience in office supervising complete design of industrial bldgs., hospitals, and institutions. Resident metropolitan N.J. PW-8487, Engineering News-Record.

PERSONABLE, AMBITIOUS young man, 26, recent Master's degree in C.E. from MIT, having specialized in water power engineering, seeks position with future as Junior Hydroelectric engineer with progressive Consulting Engineering firm N.Y.C. or vicinity. PW-8485, Engineering News-Record.

PUMPCRETE OPERATOR: Top allowed AI man with 15 years experience desires good size pumpcrete job. Address PW-8465, Engineering News-Record.

C.E. 23 yrs office engineering experience. 12 yrs supervisory and executive positions. Desire exec. position with established firm wherein engineering background would be an asset. Salary $8-10,000. Prefer West. loc. PW-8388, Engineering News-Record.

PROJECT MANAGER, Engineer or superintendent. Forty years experience. Design, Construction and operation Power Plants, Steel Mills, Mining, Paper Mills, Sugar Mills, Air Force and Navy Test Facilities and various heavy industrials. U.S. and Latin America, speak Spanish. Now employed, available shortly. PW-8383, Engineering News-Record.

CONSTRUCTION ENGINEER—18 years experience in diversified heavy construction in United States and South America. Available now for foreign opening only. No personal attachment. Write PW-8408, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Concrete pipe manufacturer, considerable experience. PW-8423, Engineering News-Record.

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Diesel Crawlers
80' Min. Boom — Immediate Delivery
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10 tons 18" x 42.7# x 40/45'
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BEAMS
50 tons 18" WF 50# x 50'55'
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2 Model 80-1 Cleveland Backfiller, Tamper and Side Crane. Slightly used.

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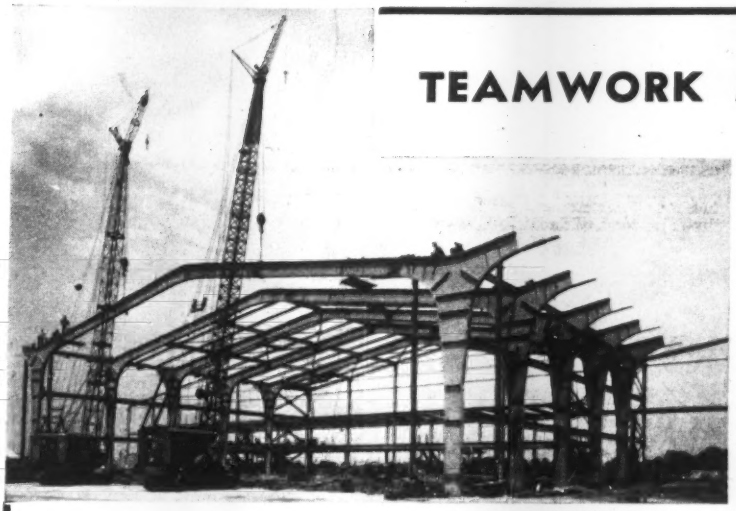

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1 yd. Blaw Knox single line hook-on type, excel. condition. 3400#.
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2½ yd. P&H Mdl. 955-LC, Ser. 5309, Cat. D-17000 Diesel eng., 100' boom, operate either from cab or remote control 32' hi tower. Ideal for levee, pit, dock, etc. Excel. condition.
1½ yd. P&H 655-A Diesel Crane or Dragline, Ser. 6426, 75' boom, 20' jib, Cat. D-13000 Diesel, hi gantry. Rental only.
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1¼ yd. Bucyrus Erie Mdl. 33-B, Ser. 16502, 8 cyl. "V" type LeRoi gas eng. (eng. new 1948). 50' boom.
¾ yd. LS-85 Link Belt, year 1946, Cat. D-4600 Diesel eng., 40' boom.

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Mead Morrison #952, 7½ HP, 3/60/220, motor to handle 1 to 5 loaded cars.

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Mdl. 501 Koehring #1071, 60-70-80' boom, 18' jib, Mdl. K Wisc. gas eng. Cap. 40,000# @ 12'. Shpg. wt. 97,200#.

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30 ton Mdl. F OHIO #3266, 50' boom, oil fired, Nat'l. Board 200# boiler.
25 ton Indus. Brownhoist Type G #4369, 40-50-60' boom, Nat'l. Board Boiler 150#.

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100 HP American 3/drum, #1888M, 3/60/440, 9,000# @ 275 FPM, w/attached Lidgerwood swinger.
50 HP American 3/drum, 3/60/220, 7,500# @ 200 FPM. Wt. 10,000#.
100 HP 1/drum Jaeger, Special Mdl. LCT6, Hercules gas eng., Twin Disc Torque Convertor, cap. 3,000# @ 350 FPM to 31,000#. Main drum reversible. New condition. Wt. 11,500#.

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¾ yd. P&H Mdl. 255A, Ser. 5750, 6 cyl. Wauk. gas eng., 35' boom.
#3 Northwest, Ser. 4603, 40' boom, Wisc. gas eng. Good condition. Engine rebuilt.

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20 ton American Terry Guy, 110' mast, 100' boom, ball bearing foot blocks.
30 ton Wiley Mdl. F Steel Stiffleg, 60-80-100' boom, rated 30 ton @ 38' with 60' boom.

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WE HAVE A LARGE STOCK OF REBUILT AND GUARANTEED HOISTS, ELECTRIC, GAS, DIESEL AND STEAM, 1, 2, & 3/DRUM. VERY ATTRACTIVE PRICES.

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15 ton Vulcan Std. Ga., Ser. 3903, LeRoi Mdl. JMS gas eng., operating condition. Special $1,800.00.
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75 KW AC DIESEL GENERATOR

75 KW Diesel AC Generator, 220/440/60/3, Cat. D-13000 Diesel eng. Complete with all control panels. Generator completely rewound. Excel. shape. A Real Buy.

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CAMP HILL, SUBURB OF HARRISBURG, PA.

L. B. SMITH INC.

New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 2 NO. 3

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Gardner-Denver 500 cu. ft. diesel, good operating condition.
Gardner-Denver 365 cu. ft. diesel.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

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2540 Cedarapids 4A primary unit, diesel power.
2036 Cedarapids AAA primary unit on rubber, diesel power. Rebuilt.
1036/2418 Cedarapids Jr. Tandem unit on rubber.
Cedarapids Rock-It plant w/2025 jaw, 3033 hammermill. New.
4033 Cedarapids Model 6C plant. New.
2020 Cedarapids double impeller. New condition.
4024 Cedarapids roll. Rebuilt.
3018 Cedarapids roll. Rebuilt.
1036 Cedarapids jaw. Rebuilt.
10x7 Allis Chalmers lake type jaw crusher. Rebuilt.
B-3 Jeffrey swing hammer pulverizer. Rebuilt.
60" dia. x 14' long Traylor revolving screen. Rebuilt.
24" Wemco single pitch sand screw. New condition.
15 cu. yd. Cedarapids sand drag. New.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8' x 18' storage bin w/clam gates.
100-ton, 2 compartment, 13'x23' storage bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.
24" Dia. x 30" face magnetic pulley.

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1½-ton Ford with any body.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

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1½ KW to 125 KW, alternating and direct current gasoline and diesel powered.

SHOVELS—CRANES

Lorain 77, 1½-yd. diesel.
Lorain 75B, 1¼-yd. diesel.
Lorain 57, 1¼ yd. diesel, rebuilt.
Lorain L-50-I, 1-yd. diesel.
Lorain 40 truck crane on Mack 3-axle truck.
Link Belt LS85 diesel combination.
Unit 514, ½-yd. gasoline crawler shovel, rebuilt.
Lorain 30A, ½-yd. gas combination.

SHOVEL & CRANE ATTACHMENTS

Lorain L-41 Chain Crowd Shovel Attachment. Rebuilt.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
McCaffrey Model 648 for 1¼ to 2-yd. crane.
McCaffrey Model 636 for ¾-yd. to 1-yd. crane.
Lorain 77 crane boom, 45'.

BACKHOE BUCKETS & ATTACHMENTS

Lorain 30 hoe attachment complete.
¾-yd. Lorain, 40, LBS #6105. 44" cutting width.
¾-yd. Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

LIFTING MAGNETS

1—45" Ohio lifting magnet, rebuilt.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
Bucyrus-Erie 1¼-yd. gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS #2260.
Pettibone-Mulliken 2-yd. Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd. for 3500 Manitowoc LBS #5763.
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Koehring 10'-12' finishers, rebuilt.
Cleveland formgrader, new 1944 rebuilt.
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TRACTORS

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Model CR Tournapull w/16-yd. Model E16 Tournarocker, rebuilt.

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Sanderson-Cyclone #44 well drill, new.
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Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

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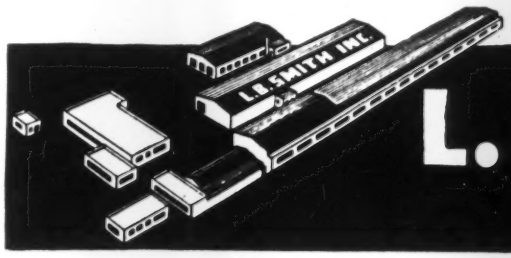

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Jaeger-Lakewood, Tandem Screed & Finishing Machine, Adj. 10-12-14-20', Model F.C. 5,250.00

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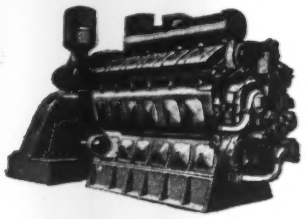

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1136	Fairbanks Morse	38D	1600	720	250	Fairbanks Morse	37–E	375	360
1100	General Motors	16–278A	1600	720	200	General Motors	8–268A	350	900
750	General Motors	12–567	1080	720	150	Worthington	CC–4	225	450
500	Baldwin	VO–8	750	514	150	Buckeye	80	240	600
500	General Motors	8–278A	750	720	100	Worthington	BB–5	150	600
500	General Motors	8–567	720	720	100	General Motors	3–268A	150	1200
400	Ingersoll-Rand	8–8	600	720	60	General Motors	6–71	90	1200
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44 ton GE Diesel-Elec. Loco. new 1951.
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Also Trucks—Concrete Mixer—Fordson Tractor
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IF YOU INQUIRE

1. One P&H model 655-A 1½ yard **shovel,** Cat. D-13000, new 1945.
2. One Koehring model 301 combination **clamshell and dragline,** 50' boom, Wisconsin gas engine.
3. One P&H model 300 ⅜ yard **shovel,** gas powered.
4. One Insley model K-12 ½ yard **clamshell and dragline,** 35' boom, Buda gas engine.
5. One Unit model 514 combination **shovel and hoe.**
6. Two Rex 3 yard high discharge **truck mixers,** excellent condition, cleaned and painted.
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ALLIS CHALMERS HD5G tractor with front end loader.
EXCELLENT CONDITION $6,500.00

KOEHRING model 205 shovel/backhoe combination. Crawler mounted. Powered by International UCBM gas engine.
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GALION TRENCH ROLLER with Wisconsin gas engine and hydraulic steering.
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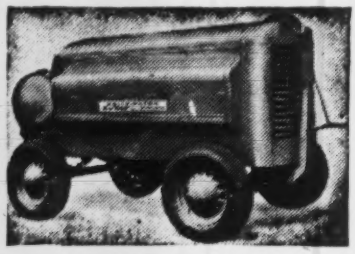

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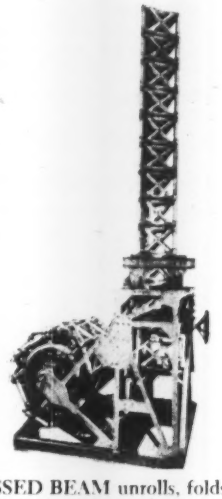

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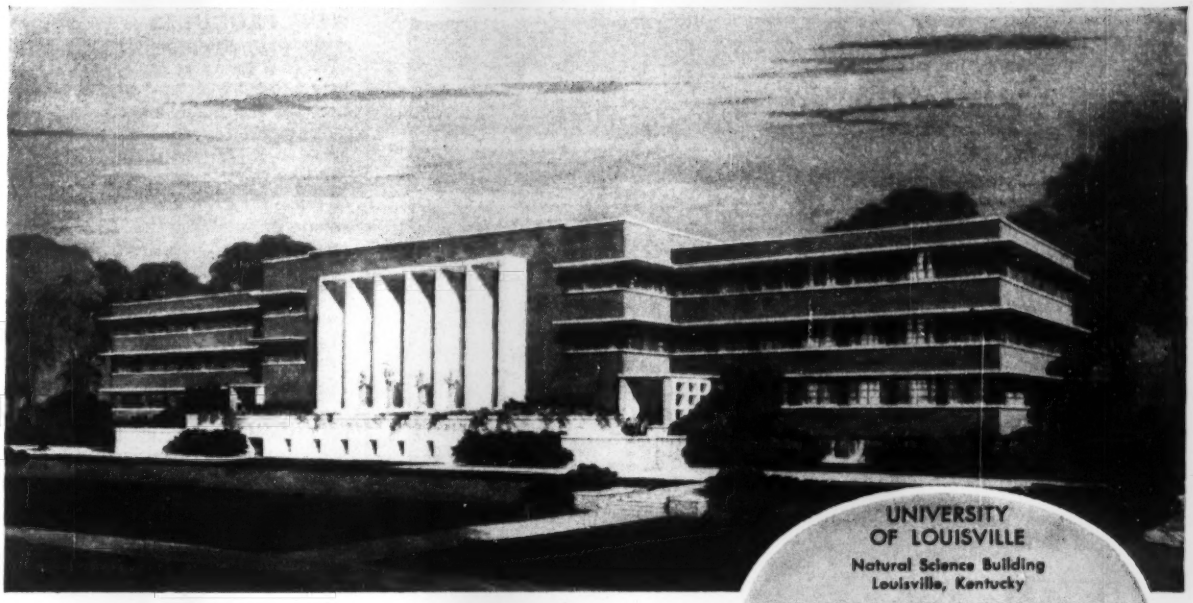

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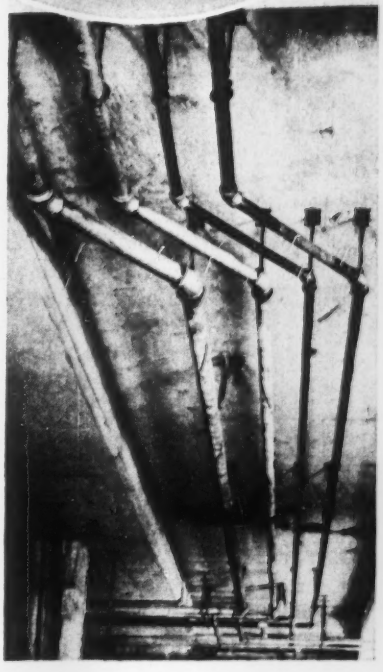
This New UNIVERSITY BUILDING passes the Corrosion Test with Byers Wrought Iron Pipe

The piping specifications for this new building reflect the insistence of the architect on *durability*. In the services where corrosion was anticipated—hot and cold water lines and returns — wrought iron was used to safeguard the installation from premature failure.

Everyone concerned with the operation of educational institutions knows how important it is to build for maximum service life, because every dollar spent for avoidable repairs drains away funds needed for other things. Byers Wrought Iron pipe has proved its ability to combat corrosion in a wide variety of services, thus reducing repairs and replacements in pipe lines. Any architect or engineer who is looking for *lowest cost per year* in his installation piping will find it profitable to investigate this material.

The best guide in applying wrought iron is not just a list of current uses, but an understanding of just what wrought iron is, how it is made, and why it resists corrosion. This story is condensed in our booklet, *The ABC's of Wrought Iron*. We will be happy to send you a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, New York.



BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON
WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

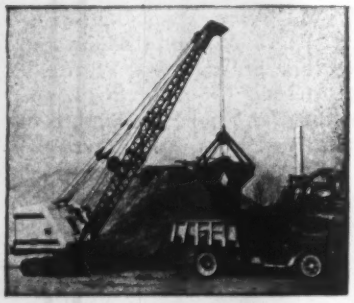
GarWood 75

A Heavy-Duty Truck Crane that can Lift up to 20 Tons!

Gar Wood's 75BT truck crane gives you a specially designed, heavy-duty chassis for mobility and speed with full 40,000 lb. lifting capacity . . . Folding boom for easier handling in heavy traffic . . . High gantry, optional fluid coupling to absorb shock loads and power load lowering can't be beat for smooth, precision work! . . . Power actuated mechanical drum clutches, exclusive right angle drive, conical hook rollers and many other operating advantages for faster, easier work . . . The 75BT truck crane is quickly convertible to all attachments including the new, exclusive, profit-making Gar Wood Foundation Borer — the machine that bores and bells in one fast operation . . . Get details from your dealer—

TWO CRAWLER MOUNTED CRANES!

Standard-duty 75A and heavy-duty 75B models. With 35 ft. boom on 12 ft. radius a 75A lifts 16,500 lbs. and a 75B, 21,200 lbs. . . . .Both are easily convertible *in the field!*



GAR WOOD INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Executive Offices • Wayne, Michigan

F-530

NEW PRODUCTS

• **What good is it**—As far as possible uses for the beam are concerned, the manufacturers frankly admit that they have just scratched the surface. At present the beams are being used as collapsible antennas and masts, and six are on order by the Paris police for use as jeep-mounted observation towers.

Some suggested uses for the beam are as mobile towers, scaffolding, heavy-duty jacks, falsework, bridge members, collapsible cranes and mobile lighting towers.

The beam and forming machine are presently being manufactured only in France, but according to the U. S. representative, plans are being made to develop a distributorship and to establish manufacturing facilities in the United States. COMMONWEALTH RESEARCH CORP., 11 W 42ND ST., N. Y., N. Y.

Rubber segmented idlers absorb impact, cut wear

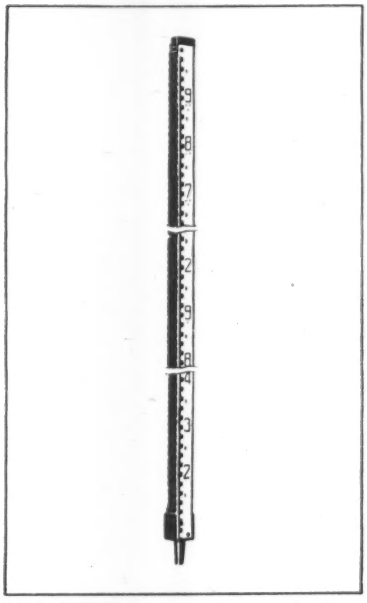
Each of the three rolls of a new conveyor impact idler is equipped with rubber segments 6¼ in. in diameter, 1⅛ in. wide, mounted side by side on a 2¼ in. O. D. seamless tube.

Designed to absorb the shock of falling material, they thus prevent undue cutting and wear of the belt. Flexibility of the segments is said to permit the belt to run smoothly over the idlers even though the material may not be evenly distributed on the roll. Trough of left hand and right hand rolls is 22 deg.

From the same manufacturer, new self-cleaning return idlers of single roll construction feature rubber segments 6¼ in. dia, 1⅛ in. wide and 2¼ in. bore. Two of the segments are mounted side by side on each end of the roll. Additional segments—two, four or five depending on the width of the conveyor—are evenly spaced on the roll to permit the conveyor belt to travel freely without a build-up of material on the roller.

New 6-in. diameter, self-aligning troughing idlers feature two guide rollers—one on each end of the set of troughing idlers—and a pivoted troughing idler frame. It is claimed that when the conveyor belt is unevenly loaded, self alignment of the idlers is assured because they swing freely on the pivoted base while the guide rollers hold the belt in line. Trough is 22 deg.

The three sets of idlers described are available for 24-, 30-, and 36-in. conveyors. PIONEER ENGINEERING WORKS, 1515 CENTRAL AVE., MINNEAPOLIS, MINN.



ROD SHOE is precisely ground off at origin of markings to eliminate index corrections.

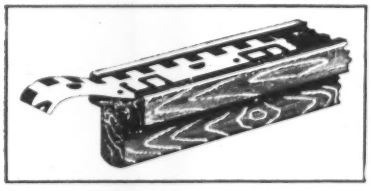
Precise level rods use invar ribbon faces

To keep pace with the increasing accuracy of precise level instruments Keuffel & Esser Company has developed a new type of precise level rod that is reported to combine all the requirements of a precise rod in a light, easily handled piece of equipment.

The rod consists of a T-section wooden staff about 10 ft long and 1½ in. wide that supports an invar steel ribbon in recessed guides.

The lower end of the invar ribbon is attached to the shoe by a positive connection, and the upper end is held at an established tension by a spring. The face of the ribbon is engine-divided to hundredths of a yard; the pattern of markings approximates that of a Philadelphia rod.

The rod is fitted with a circular rod level and, if desired, a thermometer can be mounted through the rod so that its bulb is in contact with the back of the invar ribbon. The value



INVAR RIBBON is secured in recessed guides.

GarWood 75

A New 3/4 yd. Shovel with Many Exclusive Features!

Gar Wood has designed the *new* "75 series" shovels to combine many new and exclusive operating features with time-tested standards of advanced design and rugged construction . . . Both the standard-duty 75A and the heavy-duty 75B have *power actuated mechanical drum clutches, right angle drive, independent chain crowd, power steering, independent travel, conical hook rollers* to eliminate rocking and an optional *hydraulic coupling* to absorb shock loads . . . Easy field conversion for crane, clam, dragline, magnet, pile driver or trench hoe work . . . Don't miss checking the profit potentials of the exclusive new Gar Wood Foundation Borer — the machine that bores and bells in one operation . . . See your dealer for details —

EASY CONVERSION IS A FEATURE

Your Gar Wood shovel can be quickly adapted for trench hoe work. Digs up to 17'10" depth, dumps at heights up to 19'3". Standard 40" dipper. 36", 31" and 26" widths optional.

GAR WOOD INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Executive Offices • Wayne, Michigan

F-533

Waterproofed BRIXMENT MAKES DURABLE MORTAR

Brixment is permanently waterproofed, during manufacture, with the most effective air-entraining waterproofing agent known.

Even under pressure, water cannot readily penetrate Brixment mortar. This prevents the mortar from becoming saturated — therefore helps protect it from the destructive action of freezing and thawing, to which it is subjected many times each winter. (See Figure 1.)

* * * * * * * *

In addition to making the mortar more durable, the waterproofing in Brixment gives you two *other* benefits:

1 HELPS PREVENT LEAKY WALLS

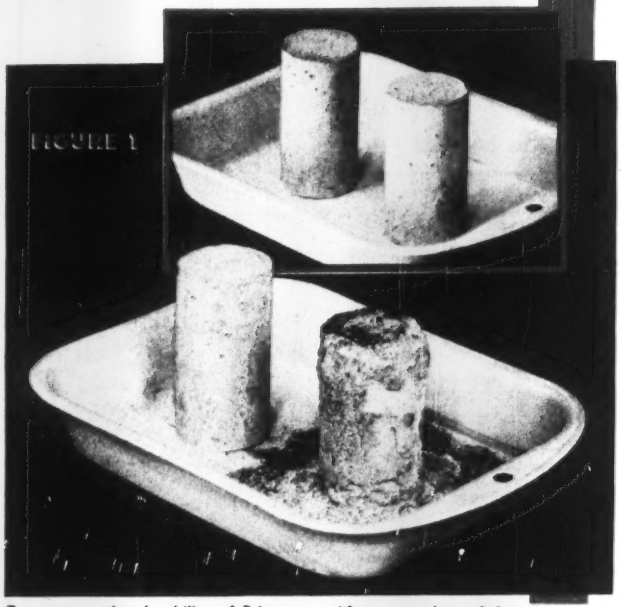
Water cannot readily pass through Brixment mortar. Therefore, if the face brick are back-plastered with Brixment mortar, an effective barrier is set up against the passage of water to the inside of the wall.

2 HELPS PREVENT EFFLORESCENCE

Waterproofed Brixment mortar checks the passage of water and keeps it from percolating down through the wall, dissolving salts which may be in the masonry materials, and carrying them to the surface.

Both these advantages of waterproofed Brixment are described in other recent advertisements. Write for reprints.

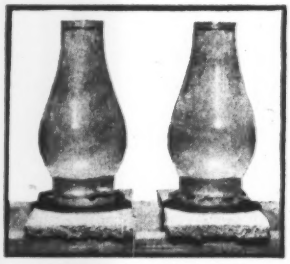
Louisville Cement Co., Louisville 2, Ky.



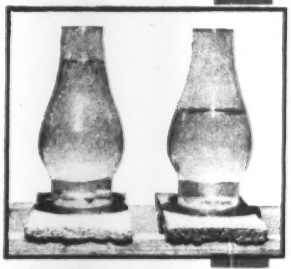
To compare the durability of Brixment with that of any non-waterproofed mortar, make a cylinder or block of each, let both cure for a month or so, then freeze and thaw them about 15 times in your deep-freeze or refrigerator, with a little water in the pan.

After a number of freezings and thawings, you will note that the cylinder of Brixment mortar (at left, in both the before and after photographs above) retains its original condition, while the cylinder of non-waterproofed materials has badly crumbled and scaled.

FIGURE 2



Prepare two slabs of mortar, one with Brixment and one with ordinary cement-and-lime mortar. After mortars have hardened, seal a lamp chimney to each of the mortar slabs, using wax or candle grease, and fill with water.



After 24 hours, note how much water has gone into and through the non-waterproofed mortar, and how little water has gone into or through the Brixment mortar.

of the low thermal coefficient of expansion of the ribbon is supplied by the manufacturer.

After assembly, the bottom of the rod shoe is ground off to coincide with the origin of the markings. This eliminates the need for making index corrections.

The rod is designed to be used with a precise level and the three-wire method of leveling. The manufacturer recommends that the stadia wires in the instrument be spaced so that the stadia multiplication constant is 0.3 per 100. With this arrangement, the sum of the reading of the three wires gives the rod reading in feet and the total stadia intercept multiplied by 1,000 gives the length of the sight in feet. KEUFFEL & ESSER CO., 300 ADAMS ST., HOBOKEN, N. J.

Equalizing slings feature frictional locking

Designated as Model 52, a new Caldwell adjustable sling is offered in a range of nine sizes, from ¾ to 28-ton capacities.

An important feature of the sling is the adjustable locking device that enables the wire rope legs to be frictionally locked in place. Adjustment of the leg length is dependent on the position of the sling in relation to the load's center of gravity. When the unit is positioned over the center of gravity the load will lift level. When not in use, the lock does not interfere with regular sling operation.

The manufacturer states that a safety factor of 5 to 1 at a 45 deg angle has been maintained and that as much as ⅓ of the rated load may be carried on one leg without slippage. THE CALDWELL COMPANY, ROCKFORD, ILL.

Drafting bottlenecks cut by printed drawings

Originally developed to eliminate hand lettering of title blocks, printed acetate sheets are now being used on drawings requiring repetitive work. The time-wasting task of lettering bills of materials or drawing standard components and subassemblies is thereby eliminated.

Stanpats, as they are called, are custom-printed to the individual requirements of the engineer or draftsman. Faced with a transparent, pressure sensitive adhesive, the printed pieces are applied to the back of tracings, and the rest of the drawing is completed in the conventional manner. STANPAT ENGINEERING CO., WHITESTONE 57, L. I., N. Y.

Bruning COPYFLEX "20"... ideal whiteprinter for the smaller office

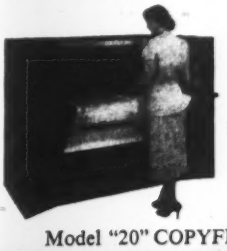
Get prints in 5 minutes!

There's no waiting for prints with a COPYFLEX "20" in your office.

Engineers, designers and architects who require prints in moderate volume line up solidly behind the low-cost Bruning COPYFLEX "20" whiteprinter. It takes cut or roll paper stock, quickly turns out ready-to-use prints of drawings and office forms up to 42 in. wide — *at an average cost of less than 2¢ per square foot.*

Here's why the COPYFLEX "20" is ideal:

LOWEST-PRICED copying machine in its class
TWO CENTS A SQUARE FOOT average operating cost
SPEEDS DELIVERY of ready-to-use prints
NO FUMES to be exhausted . . . no expensive plumbing or ventilation system required
OPERATES ANYWHERE — simply connect to a standard 115-volt a-c power line
NO TRAINING NEEDED to operate; a 5-minute explanation suffices



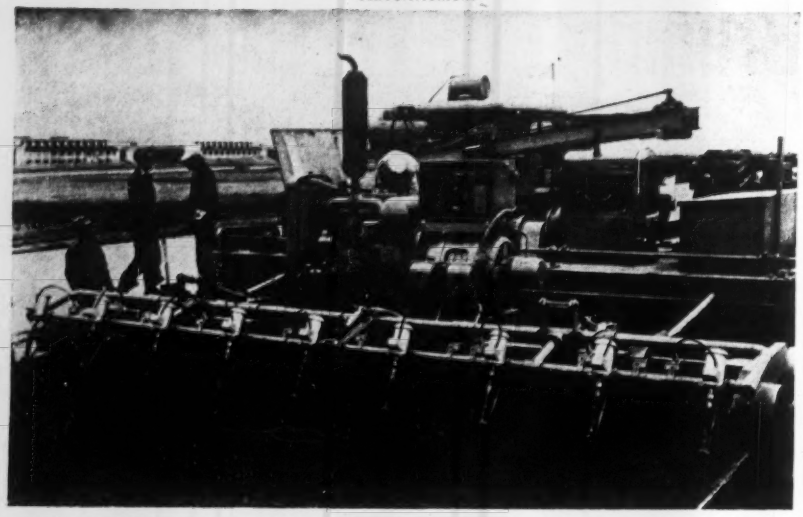
Model "20" COPYFLEX

• These are only a few of the facts and figures on hand to prove that the *low-cost* Bruning COPYFLEX "20" can give you better prints faster, for less money. Just mail the coupon below for details on the COPYFLEX "20". B-3-2A

BRUNING
Specialists in copying since 1897

CHARLES BRUNING COMPANY, INC.
Dept. 4700 Montrose Ave., Chicago 41, Ill.
☐ Send me free booklet on COPYFLEX "20".
☐ I'd like to see the COPYFLEX "20" demonstrated.
Name ..... Title .....
Company .....
Street .....
City ..... Zone ..... State .....
OFFICES IN PRINCIPAL CITIES

Advertisement



FULL DEPTH INTERNAL SLAB VIBRATOR easily handles low slump concrete in heavy slab pavements required in modern airport construction.

Paving Vibrator Speeds Low Slump Airport, Highway Jobs

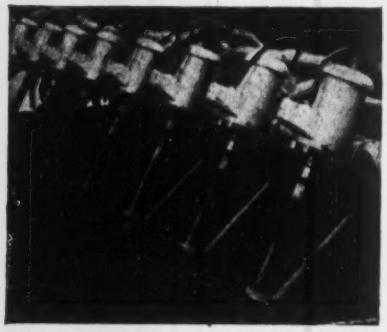
FERGUSON-VIBER full depth internal slab vibrator handles ¾ inch to 1 inch slump concrete in 20 inch slabs on Nebraska airport paving job.

To speed laying high strength uniform slabs up to 20 inches deep, using ¾ inch to 1 inch slump concrete, Abel-Dobson and Robinson of Lincoln, Nebraska, use 2 FERGUSON-VIBER full depth internal slab vibrators on their 340,000 cubic yard job at Lincoln Air Force Base, Nebraska. Thorough vibration makes it easy to handle a mix so dry it can be finished without delay. This keeps length of the equipment train down to a minimum and permits better supervision of working crews.

These FERGUSON-VIBER paving vibrators were furnished complete with nine electrically driven three inch vibrators, an engine driven generator, and all control equipment mounted on an adjustable width framework towed by the spreader. They will handle any slab depth now designed.

The FERGUSON-VIBER full depth internal slab vibrator manufactured by Shovel Supply Company, Dallas, Texas, is based on an original VIBER design used successfully on airports and highways in the United States and abroad since 1943. It is another example of the progressive design and development that keep VIBER a leader in the vibration field.

For information on the complete VIBER line of external and rubber-tipped internal vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, California. Dept. 67



UNIFORM VIBRATION is assured for full width and depth of slab. (Note change in concrete after vibration). One man operates all hydraulic and electric controls.

NEW PRODUCTS

Corrosion in steam systems cut by film-forming amine

Corrosion in steam condensate systems resulting from the presence of oxygen and carbonic acid is said to be controlled by use of a film-forming amine. Hagafilm, as it is called, is fed to the boiler in small amounts, on the order of about two to three pounds per million pounds of steam.

The compound vaporizes with the steam and deposits a thin, non-wettable protective film on all metal surfaces where condensation occurs and throughout the return system. If only a part of a return system needs protection, the Hagafilm may be injected into the appropriate branch steam line.

The material is available in solid and liquid emulsion forms in 55-lb and 55-gal drums. The liquid form also is available in 5-gal cans where needs are particularly low. The solid requires mixing with hot concentrate before injecting.

The additive is reportedly non toxic and imparts no dangerous characteristics to steam from treated lines. HAGAN CORP., HAGAN BLDG., PITTSBURGH 30, PA.

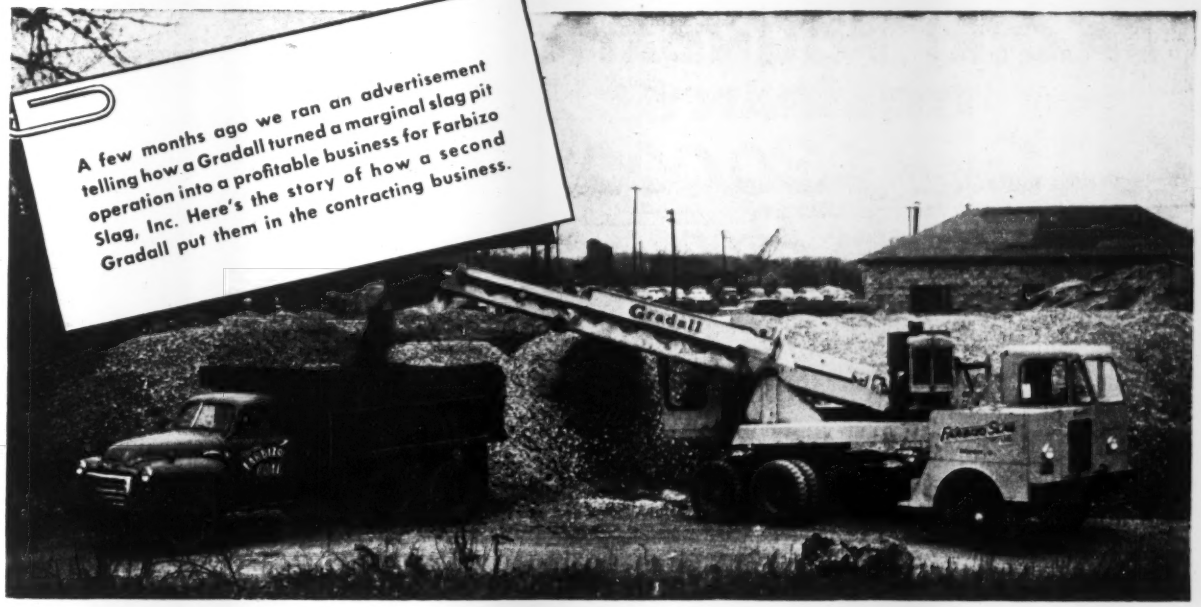
Metallized conduit forms easily

A new rigid steel conduit, reported to be resistant to corrosion and easily formed (through the use of a new method of coating) has been developed and is now available.

Metallizing has been used for more than 30 yrs on pipelines and trestles, but this is thought to be the first time it has been applied to rigid conduit. In the process, pure zinc is sprayed through a flame and onto the conduit in a plastic state. This is said to bond a controlled uniform coating on the pipe and threads without the need for quenching and consequent hardening of the pipe. Also, brittle zinc-iron alloy is not formed between the metals.

In addition to the metallizing process, a new anti-friction inside coating has been incorporated to ease wire pulling and as interior protection against corrosion.

According to the manufacturer, the new G. E. White rigid conduit conforms with the American Standards Ass'n. specifications, is listed by Underwriters Laboratories, Inc. and meets all U. S. Government specifications. CONSTRUCTION MATERIALS DIV., GENERAL ELECTRIC CO., BRIDGEPORT 2, CONN.


A few months ago we ran an advertisement telling how a Gradall turned a marginal slag pit operation into a profitable business for Farbizo Slag, Inc. Here's the story of how a second Gradall put them in the contracting business.
Gradall

Gradall "fills in" on Farbizo's slag pit operation during busy periods.

Clarence Farbizo, President and General Manager, right, talks over new job with Gradall driver.

"Our records prove the Gradall's fast, clean work really pays off," says Arthur Earle, Secretary and Treasurer of the firm.

Follow-up to a Success Story!

A FEW MONTHS AFTER Farbizo Slag, Inc. of Dover, Ohio, bought a Gradall for its slag pit operation, the firm purchased a second Gradall for a profitable contracting business that had developed through the use of the first machine.

When the owners, Clarence Farbizo and Arthur Earle, bought the first Gradall they intended to use it full time in their slag pit. However, during the slack periods they "tested" their Gradall on a few outside jobs.

"We thought we should know its capabilities in case we wanted to use the machine on outside work," Farbizo said.

"The word soon spread that our Gradall could do a better job—quicker and cheaper. The machine practically eliminates hand labor from digging basements, excavating for gas tanks and cesspools, digging silo foundations, trenching, and the like," Earle added.

There were so many jobs for the Gradall outside the slag pit that they bought their second Gradall. Now both machines are busy full time, one working in the slag pit and the other on outside contracts.

Yes, there are always jobs to keep a Gradall busy. Its quickly interchangeable attachments enable it to do the work of several one-purpose machines. And its unique, hydraulic *arm-action* handles each job fast and efficiently—eliminating costly hand labor.

But see a Gradall in action—see for yourself how it can make your operation more profitable. Your nearest Gradall Distributor will be glad to give you a field demonstration of the Gradall's many uses.

Gradall Distributors in over 75 principal cities in the United States and Canada

Gradall
DIVISION OF WARNER & SWASEY Cleveland

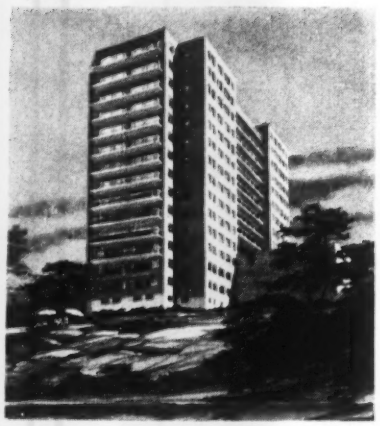
YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

HOW FRANKI FOUNDATION COMPANY Saved $30,000 For Palisades Properties Inc.

Highpoint House, New York City, presented a tricky foundation problem. To be erected on the side of a hill, some of the column loads were of considerable proportions—approximately 400 tons. Deep excavations were impractical due to sloping of the site. Firm foundation costs were difficult to obtain from competing sub-contractors.

Franki undertook the problem—promising a quicker, cleaner job based on a firm foundation. Load testing under the New York Building Code was done at 200% of design load. The gross movement under this load of 240 tons was 3/10" and the net after the load was removed amounted to 1/8" on a displacement caisson less than 19 feet long.

When the job was completed, it was found that displacement caissons (Franki Pressure Injected Spread Footings) had saved the client $30,000 and considerable time as well.



Highpoint House, an imposing 15 story apartment building, to be erected perpendicular to the Hudson River in Riverdale, New York City.

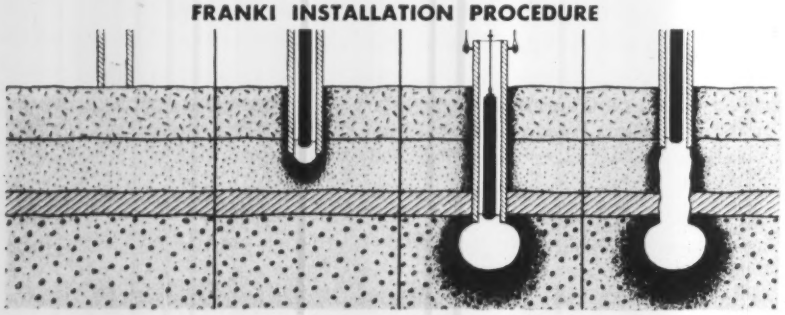
• • •

Palisades Properties, Inc.—Owner
Greenhut & Taffel, New York, N. Y.—Consulting Engineers
Henry Kibel, New York, N. Y.—Architect

. . . LIGHTEN YOUR COSTS . . . INCREASE YOUR LOAD! . . .

Send for "Franki Facts" for complete information about the Highpoint House project—and an illustrated booklet describing the Franki Foundation method in complete detail. Write Franki Foundation Company, 114 East 40th Street, New York.

FRANKI INSTALLATION PROCEDURE



FRANKI
FOUNDATION COMPANY

NEW YORK, N. Y.
PHILADELPHIA, PA.
PITTSBURGH, PA.

FIRM FOUNDATIONS FOR OVER FORTY YEARS

Open end ratchet wrench works in tight spots

An open end socket-type ratchet wrench has been developed for working in tight, poorly accessible places. Functioning with as little as seven deg of ratcheting arc, the wrench is particularly useful for work around internal combustion engines.

A regular square drive handle permits substitution of a torque handle for exacting specifications, and the makers point out that the all-internal ratcheting mechanism within the head will withstand exceptionally high torque loads.

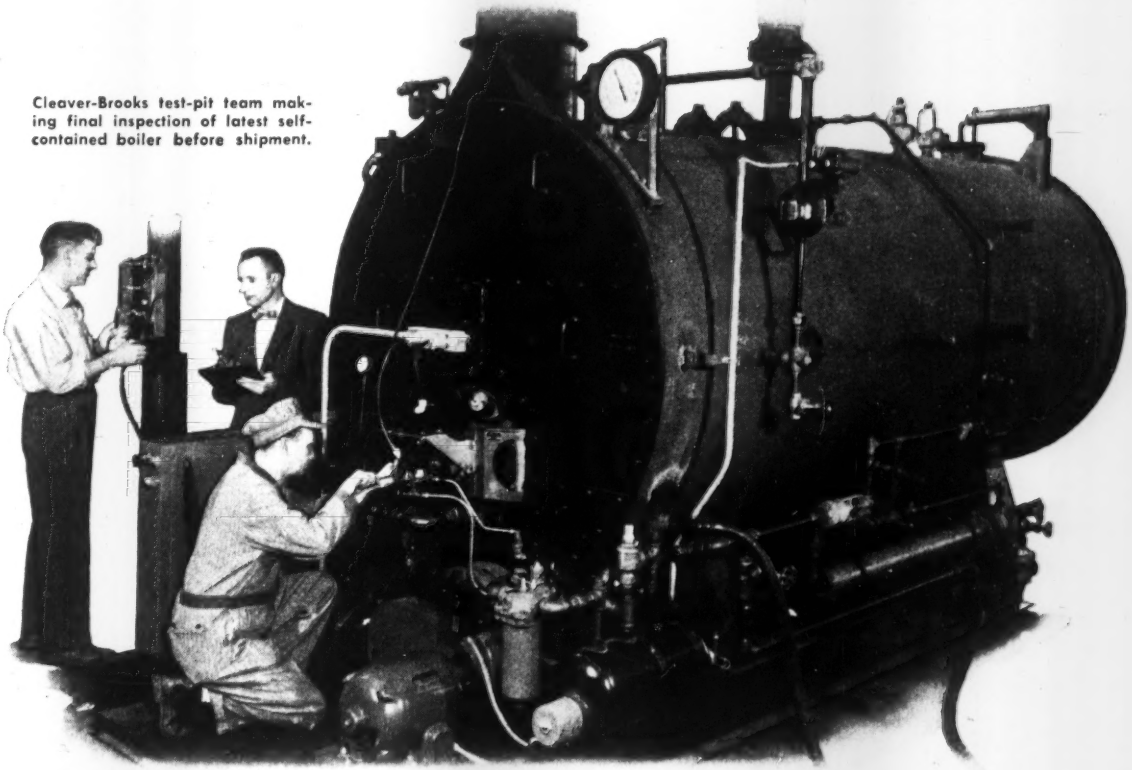
Six sets are offered with a total of 64 snap-in sockets to cover a range from 3/8 to 4 in. dia. The head and sockets are centerless, permitting use of the tool on spark plugs, long studs and other high standing center obstacles. There are also crowfoot head and spanner head adaptations available for this new wrench. Tubing Appliance Co., 10321 Anza Ave., Los Angeles 45, Calif.

New hose couplings seal out dirt

New automatic couplings for air hoses have valves that automatically shut off air pressure and eliminate the need to open and close valves at the compressor tank.

The couplings are made with identical valves in each end, spring seated to prevent passage of air when disconnected. Pressurized air bears against the valve ends to seal them, and therefore foreign particles are

their counterpart "Test-Pilots" have at Cleaver-Brooks



Cleaver-Brooks test-pit team making final inspection of latest self-contained boiler before shipment.

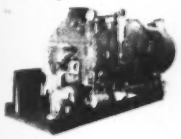
HIGH SCORES . . . on factory and on-job tests guarantee greatest return from boiler investment

When test pilots give the familiar "O.K." — that's the sign of proven performance. It's the same with boilers in the Cleaver-Brooks plant. Only after accurate, thorough inspection and testing under actual operating conditions do boilers get the final "O.K." from experienced test engineers. That's why you get guaranteed 80% efficiency from your Cleaver-Brooks boiler.

A record of this test is available to every buyer on request. In fact, you as a buyer, consultant, or contractor are invited to witness the actual test on your Cleaver-Brooks boiler before shipment.

And further, Cleaver-Brooks boilers are placed in operation at the job site by factory service engineers who check installation, train your operators and make complete and detailed field tests.

So, when you buy a boiler, insist on factory tests as well as field service tests by qualified engineers. There is no better way of insuring yourself of the very best value money can buy and the greatest return from your boiler investment. Look to Cleaver-Brooks, the leader in the "Packaged" Boiler field for two decades. Write today for latest Catalog AD-100.



Available for oil, gas and combination oil/gas firing.

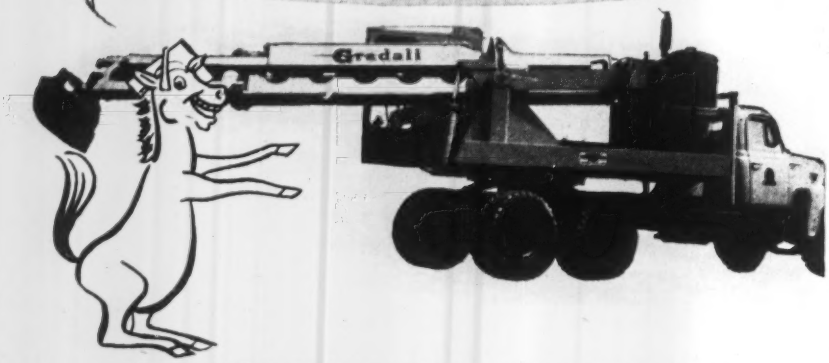
CLEAVER-BROOKS COMPANY
Dept.H, 343E. Keefe Ave.
Milwaukee 12, Wisconsin, U.S.A.

Cleaver-Brooks

Originators of the Self-Contained Steam Boiler

BOILERS — STEAM OR HOT WATER — FOR HEATING AND PROCESSING IN SIZES FROM 15 TO 500 HP, 15 TO 250 PSI

Let's Talk Horse Sense about Horsepower

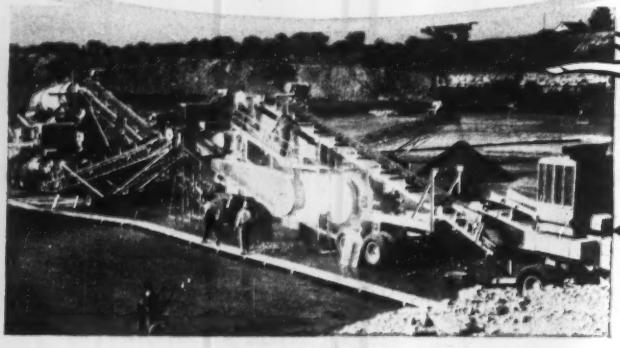


IT TAKES MORE THAN HORSEPOWER TO GIVE YOU PRODUCTION POWER

To handle rated load capacity for long and extended periods takes more than horsepower. It takes high torque developed at moderate speeds by a heavy-duty industrial engine. Minneapolis-Moline industrial engines are especially designed and built to stand continuous heavy load operation because they develop *more torque* at *normal* operating speeds.

MINNEAPOLIS MOLINE MM MODERN MACHINERY

HEAVY DUTY POWER means HIGH-TURBULENCE COMBUSTION plus EXTRA HEAVY CONSTRUCTION



Compare the extra weight and extra strength of MM Engines. Note the large, sturdy crankshaft with its husky cheeks and throws . . . the larger bearings which reduce combustion pressures . . . the extra crankcase depth below the center line of the crankshaft. Examine all these factors in terms of overall performance and longer engine life, and you'll see there's real horse sense in every part of MM heavy-duty design.

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prevented from entering and traveling into air tools. When the couplings are connected the valves butt against one another and depress, opening the seats and permitting a free flow of air through the coupling.

Brass valves and seats are employed and the coupling bodies are made of anodized aluminum. Anodizing, it is claimed, enables the coupling to withstand salt spray tests for more than 1,000 hours. TWINMATIC CORP., 2246 S. BARRINGTON AVE., LOS ANGELES 64, CALIF.

New Products briefs . . .

• **Concrete vibrator**—A self-contained one-man concrete vibrator has been developed by the Mall Tool Company, 7725 South Chicago Avenue, Chicago 19, Ill. The Mall 2MGV gasoline engine unit has been designed for faster, easier narrow form vibrating from catwalks. The unit is powered by a 5 hp, 21-lb engine.

• **Tees**—A new circulating tee for one pipe hot-water heating systems is announced by Hi-Flow Products, Inc., Lindenhurst, N. Y. It has no moving parts, but extremely high efficiency is claimed for the newly developed vortex venturi action, coupled with simplicity of design.

• **Battery soldering iron**—A soldering iron which can be connected to either 6- or 12-volt power sources has been developed by the Hexacon Electric Company, 237 W. Clay Avenue, Roselle Park, N. J. It is said that this is the first soldering iron developed for use on any battery regardless of voltage.

This unit is equipped with a nickel-chromium heating element, 12-ft abrasion and oil-resistant rubber heater cord and battery clips.

• **Arc welding shield**—Called Comfort-Shield, a new arc welding head-shield features a permanently pliable head band made of plastic rather than the usual fiber. It is said that the plastic does not dry out or curl up as does fiber, but remains in a soft and pliable condition.

The shield proper is of one piece molded fiber construction with wide and deep clearance around the head to permit free circulation of air. Adjustable stops on each side of the head band limit the drop of the helmet to any point desired by the welder, thus preventing the shield from hitting the nose or chin when welding vertically or overhead. The shield takes the standard 2x4¼-in. lens and glass.

PUBLICATIONS

Blasting principles—A new 15-minute, 16 mm sound film shows how modern methods make blasting, once an instantaneous operation, an orderly and controlled sequence of events adaptable to the type of rock, the surroundings, and the specific result desired. The technical film, titled "The Inside Story," is available for showing before mining, quarrying and construction engineers at company meetings or in professional society sessions. Where more complete discussions are desired, it may be supplemented with slide films to show special types and methods of blasting in sequence pictures. Prints are available from the ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE.

Dry lumber—A 20-page booklet outlines the advantages of using dry lumber in construction and the ways in which the builder can be sure that the lumber he is using is dry. For example, the booklet says that for framing and sheathing 19 percent maximum moisture content should be specified; for finish, woodwork and flooring 12 percent moisture content is maximum. The booklet, entitled "Build Better with Dry Lumber," is available from the SOUTHERN PINE ASSOCIATION, P. O. BOX 1170, NEW ORLEANS 4, LA.

Elevating end-gate—A new descriptive catalog covers the latest model "Lift-O-Matic" elevating end-gate for pick-up trucks. The new end-gate has a 1,000-lb capacity for quickly transferring loads from ground to truck body. NATIONAL LIFT COMPANY, CUSTOMER SERVICE DEPARTMENT, WAYNE, MICHIGAN.

Gravity filters—An illustrated 24-page booklet of interest to operating, consulting and architectural engineers dealing with water problems. Bulletin 2539A shows the complete line of gravity filters made in three basic types: concrete, steel and wood, as manufactured by THE PERMUTIT CO., 330 WEST 42ND STREET, NEW YORK 36, N. Y.

Paddle flocculation—A new technical supplement "PF" on slow-mix paddle flocculation equipment for chemical mixing, coagulation and flocculation in the treatment of water, sewage and industrial wastes has just been issued. It shows a typical installation and sets forth the advantages of using equipment manufactured by the AMERICAN WELL WORKS, AURORA, ILLINOIS.

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EDITORIALS

Misuse of censorship

WHEN GARRISON DAM was to be dedicated, ENGINEERING NEWS-RECORD obtained from the district office of the Army Engineers an air view of the project that showed it in much better detail than any picture from the ground. But the Department of Defense refused to release the photo for publication, holding that it was an air view of a "military installation."

Such abuse of censorship regulations warrants the strongest condemnation. Denial of use of this particular picture was not important, but like refusal under other circumstances could be serious, as air photos are a very useful engineering tool.

Implications of a new specification

IN VIEW OF THE ESTEEM in which American Society for Testing Materials' Specification A7 for structural steel is held, some engineers may have been shocked to learn that ASTM is considering a separate specification for structural steel for welding (ENR July 9, p. 26). For the action might appear to imply that A7 steel is not suitable for welding. The facts, however, are otherwise. A7 steel, in general, is weldable, and in recommending the new specification, the ASTM subcommittee on structural steel did not intend to preclude its use in welded structures.

The purpose of the new specification is to minimize the possibility of brittle failures in large welded structures, chiefly bridges. Though brittle failures have occurred in riveted or bolted structures, damage to large welded structures failing in this manner usually is more severe, because cracks can pass through welds and spread over a wide area.

The new specification attempts to prevent brittle failures through requirements for chemical composition. These insure against low notch toughness and segregations in the steel, eliminate "rimmed" steels altogether and make certain that only fully "killed" steel will be furnished for thick material. Because of the influence of the chemical requirements on steel-mill practices, the weldable steel probably will cost more than A7 steel.

Some engineers may consider the additional cost of the weldable steel a needless expense in view of the satisfactory past record of A7 steel. Also, they may claim that a large portion of A7 steel now being produced could meet the new specification substantially anyway. However, the absence from A7 of requirements for elements other than phosphorus, sulfur and copper leaves the door open for the production of steel that may not be suitable for certain welded structures—and it may be noted, sometimes not even for some riveting or bolting applications.

The question may well be raised, therefore, as to whether A7 should have been modified to extend protection to all structural steel rather than a new specification introduced. Certainly, a single specification for structural steel that would be applicable regardless of how the material is to be connected is highly desirable, and A7, already in widespread use, could well be adapted for the purpose. A modification of A7 might create less confusion than an additional specification. Furthermore, for a long time to come, all orders under the new specification will require special heats, which may involve delay in deliveries or make use of small quantities impractical.

On the other hand, despite considerable effort over the past decade, consumers and steel mills could not agree on a modified A7 that would be suitable for both welded and riveted structures. And even if they had agreed, orders for modified A7 steel would have severely overloaded the present capacity of the industry for producing killed steel.

Apparently, in recommending the new specification, the subcommittee on structural steel decided it would be better to have a separate specification for weldable steel than wait for agreement on a modified A7. This action, however, should not hinder attempts to establish a single specification for structural steel. On the contrary, it should be helpful, for it has made easy a comparison between the existing and desired specifications. After this initial and important step, producers and consumers may not find themselves as far apart as they now believe.

Social considerations also

THE DAY MAY COME when the social implications of a large engineering operation are evaluated in much the same manner that its anticipated financial return now is weighed in determining whether the project should be undertaken. That view was expressed by Donald B. Prentice, director of the Scientific Research Society of America and former president of Rose Polytechnic Institute, at the recent dedication of a new engineering building at Lafayette College. If that day comes, Mr. Prentice added, engineers should be prepared to express sound views on what weight should be given to social considerations rather than let the politicians or social planners do all of the talking.

This proposal is a challenging one. It gives support to the reasoning of educators who seek to broaden the cultural training to which engineers are exposed. Nevertheless, it never can have any real significance until engineers as a group take a more active part in civic affairs and community activities than they do today. Stimulating an interest on the part of the young engineer in fields beyond engineering is highly desirable, but giving vitality to that interest in the years after the young man gets out of college is a problem that the engineering profession has yet to solve.

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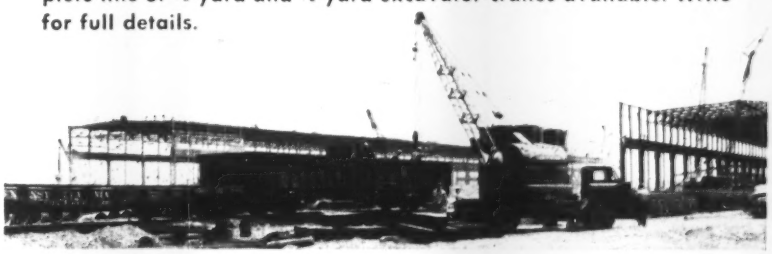

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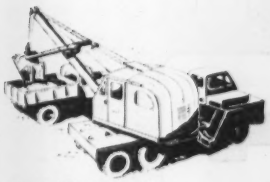

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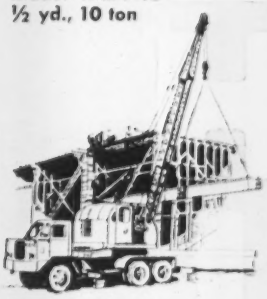

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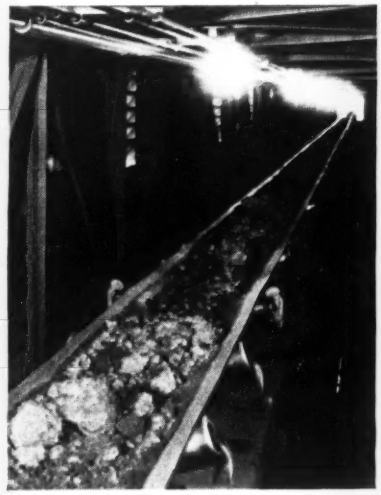
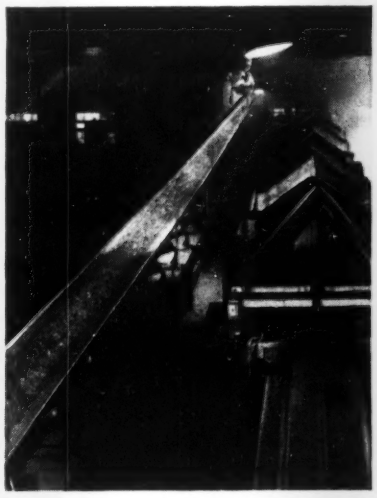
This Pioneer Washing Plant handles an average of 70 yards of sand and gravel an hour. Conveyor idlers are equipped with Timken bearings—one reason why the plant still has the same conveyor belt after 5 years' operation!



Here's a 337-foot Bartlett and Snow conveyor carrying iron ore sinter at the rate of 150 tons an hour. Timken bearings on conveyor idlers reduce friction, assure long life, reduce belt wear.



Tempered moulding sand—50 tons of it an hour—rides at the speed of 125 feet a minute on this Rex Idler Installation in a foundry. Conveyor belt is 24 inches wide. Idlers are equipped with Timken bearings.

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